COMPUTER WEEKLY, November 9, 1978

NEWS IN BRIEF

Potter sues US govt

LEGAL action is being taken by peripheral manufacturer Potter against the US government over the latter's use of tape drives that employ the 6,250 bpi Group Code R Recording technique patented by Potter in the early sixties. Under the US patent laws a company can, as an alternative to suing the manufacturer, take action against a user of equipment that employs its patent but has not been licensed. However, the US government indemnifies itself in its contracts against having to pay royalties, so if Potter wins its action they will probably have to be paid to Potter by the unlicensed suppliers.

HP launch

AN impact matrix line printer with a speed of 400 lines per minute has been announced by Hewlett-Packard. The HP 2608A can produce both conventional characters or graphics under microprocessor control, and has a starting price of £5,600.

Employment study

THE Federal German Ministry of Research and Technology is to spend 1.3 DM million (£350,000) in a bid to answer the question "To what extent will rapidly advancing technology affect employment prospects in industry?" It has commissioned a study that will be conducted jointly by Mackintosh Consultants, and Prognos of Basle.

Regent savings

BY revising its marketing arrangements for the Regent VDU range, Digico is now able to offer a full option version, with a complete range of editing for £1,060. This represents a saving of £300.

Aiding rehabilitation of drug addicts

THE first company to donate a fixed sum towards individual treatment of a drug addict under a special rehabilitation programme is IBM.

The programme, which requires the addict to follow a carefully controlled diet and lifestyle under 24-hour supervision, is run by Narconon, a worldwide drug rehabilitation group founded in Arizona State Prison in 1966. Treatment includes the intake of large quantities of minerals and vitamins to combat the painful effects of drug withdrawal symptoms, coupled with a regime of relaxing physical exercises and study periods to re-establish the ex-addict's concentration.

Rehabilitation takes between two and six months, and so far Narconon claims an 83 per cent success rate.

Supported entirely by charitable donations, Narconon has only just set up the sponsorship scheme under which companies such as IBM can donate £155 towards the opening phases of implementation of the rehabilitation programme. IBM's contribution played an important part in helping David Rowe, a 26-year-old ex-alcoholic to re-adjust to a normal lifestyle, after seven years of drug addiction, during which he was unable to hold down a job.

Today Rowe leads a normal life, after overcoming severe physical and mental hardship. He expressed appreciation of IBM's role in contributing to his new life.

The commercial sponsorship scheme proposed by the Caterham, Surrey based offices of Narconon, first came to the attention of one of IBM's employees at its Croydon branch. He recommended that the fixed sum of £155 be donated, and Rowe was immediately allocated residential treatment along with the eight other addicts currently undergoing the rehabilitation programme.

A spokeswoman for Narconon said that the group was constantly in need of financial support and the precedent set by IBM would, hopefully, be followed by other interested companies.

IBM 64K RAM 'more than just a memory'

From a special US correspondent.

ENDING speculation about its activities surrounding the introduction of its own high capacity memory chips in the new 8100 and System 38 machines, IBM last week revealed that the 64K RAM, although bigger and slower than its rivals, is more than just a memory. About 30% of the IBM chip is taken up with performance optimising functions not normally found in a version of the chip, according to T. M. Liptak, president of IBM's general technical division.

Talking in Burlington, Vermont, last week, Liptak said the 64K RAM is the king of a new family of IBM memory devices that also includes a 32K and an 18K part. Both the size and performance of this device have been the subject of considerable speculation.

Liptak quoted the typical access time of the 64K RAM as being 300 nanoseconds, while the chip area is around 62,000 square mils. The access time is more than twice that quoted by Texas Instruments for its own 64K RAM, and the size is about double the TI part.

But the extra functions in the IBM chip include, for example, an 8-bit register that is capable of a 100 nanosecond data rate, bi-directional input/output bussing and the ability to access data while the memory is being refreshed. The chip also contains 2,500 bits of redundant memory.

This is only brought into play when functional testing of the chip reveals the addresses of defective bits. When located, the "redundant" memory section is programmed as a read only-write once memory, holding 300 nanoseconds, while the chip area is around 62,000 square mils. The access time is more than twice that quoted by Texas Instruments in the area to be more efficient in deploying men and equipment to fires.

Fire control aid

Due to be completely operational by next year at the Greater Manchester County Fire Service control complex in Swinton, the Ferranti produced Computer-based Mobilising System being used here will aid the 41 stations in the area to be more efficient in deploying men and equipment to fires.

Based on Ferranti's Argus 700Q system, it will be responsible for monitoring 500 square miles and a population of almost three million.

Interest has been generated among other fire areas and it was demonstrated to over 100 fire brigades last week at Ferranti's Cheadle Heath site.

Demonstrating the system in the photograph are (and in the control operator Liz Quinn (left) and fire control operator Enid Davies, both from the Greater Manchester County Fire Station.
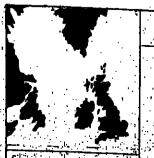
Input station for Office System 6 word processor

A SIMPLE input station for the Office System 6 word processor has been announced by IBM for the benefit of users with large volumes of keyboarding.

Designated the 6/420, it consists of a keyboard, screen and floppy disc drive. It allows discs to be prepared for printing on a separate unit without the need for buying another whole system.

At the same time IBM has announced price reductions on its existing System 6 models. These reductions range from £3,167 on the 6/430 disc-plus-cards unit to £1,598 on the 6/452.

The 6/420 will sell for £6,653 or rent for £247 a month for a 12-month lease.

Merger 'not in interests of ITT'

FUTURE restructuring of the UK telecommunications industry will definitely not include a merger of STC and Plessey, according to ITT's head office in New York. A company statement said, "ITT is not interested in a merger of STC, our major British subsidiary, with Plessey Ltd. The suggestion of such a merger was reviewed and evaluated recently and was found to be definitely not in the interests of ITT shareholders."

IPC plans to disperse computing operation

PLANS for decentralising computing control so that level within the International Publishing Corp division. International are under consideration.

Operations are now virtually concentrated at the Heath in the Computer Processing Ltd centre are sent equipped with two System 4/72s. CDP is first to migrate to 2900 (see p.4)

Some companies within already have their own Book publisher Hamlyn dependent with an IBM 370 and a Prime 300 mini. IPC Magazines has a mix and plans for a second and has chosen to run operational control onto installation but leasing development to staff towards Heath.

Legal publisher Butterworth wants an entirely in operation with its own ment staff, and is taking terms of a Digital PDP-11/70, while IEEE Press, whose main activities be on the 2900s, has opted a mini. Prime, DEC Value Data General and Hewlett-Packard are all contenders. Odhams Press already has its own development staff but all its applications on Teamco bureau, set up in Norwegian company which IBM mainframe acquired in IPC (CW, March 16, 1976).

Briefing

VW may take Nixdorf stake

SEEKING capital to enable the company to maintain its rapid growth rate and better exploit international markets, Nixdorf Computer is discussing an injection of money from West German motor giant Volkswagen which would give the latter a substantial minority stake in the Paderborn computer manufacturer.

Increased market effort for new Nixdorf products like the 8811 data telephone and 8815 word processor would result from such a deal.

Prime targets

COMPUTER systems in government departments, particularly tax, social services and immigration departments, could be prime targets if civil servants decide to take industrial action in their current pay negotiations, which have been held up pending a much delayed report from the Independent Pay Research Unit. Interview with the deputy general secretary of the Society of Civil and Public Servants — page 14.

MP attacks ICL

LABOUR MP Bob Hughes has been told that the Attorney Gen. has no evidence that there are grounds for investigating ICL's connection with Rhodesia. But Hughes, who is chairman of the Anti-Apartheid Movement, has been asked to provide further evidence to support a claim he made in Parliament last week that an advertisement offering services for ICL equipment in South Africa should lend to a scrutiny of ICL operations in southern Africa.

'Probe secret service'—Benn

THE secret service should have its computer-based files subject to public accountability according to the Home Policy Committee of the Labour Party, which is chaired by Energy Minister Tony Benn. The committee wants an inquiry into the public accountability of security services to avoid the development of an information base that is part of an "organisation which is not under democratic control."

Printers stop

SUFFICIENT order rates are the reason given by Data 100 for its decision to stop selling its OEM product line of 800 and 900 printers. The company will continue to build low speed printers for use with the systems it sells to end users and, will carry on using its line of cartridge disc drives to the OEM market.

Chinese pay-off

ten years of intensive effort in trying have begun to pay off for Olivetti with a contract for an unspecified number and type of terminals. Olivetti is also discussing technology transfer and possibility of setting up manufacturing plants in China.

Royal touch in Mexico

THE Duke of Kent (centre), Lord Chalfont (right) and Sue Hickmett (left) study terminals attached to a System Ten computer on the ICL stand at the British Industrial Exhibition, which has been taking place all this week in Mexico City. ICL SA, 51% owned by Mexican interests, was the only computer company exhibiting at this, the largest exposition staged by the British Overseas Trade Board in 1978.

The Duke is vice-president of the BOTB, Lord Chalfont is president of the exhibition, and Sue Hickmett is publicity manager for ICL's international division.

The show was opened by President Lopez Portillo of Mexico, who has spent the first two years of his term of office gearing up his country's economy to capitalise on the enormous reserves of oil which have just been discovered.

ICL hopes to win a substantial share of the computer business, and as part of the recent mission to Mexico, formally announced its intention of selling large-scale 2900s in Mexico (CW, September 14).

ICL SA was formed following the acquisition and restructuring of Singer's Mexican subsidiary, which sold System Ten and 1500 in the Central American republic for several years. On the stand was a System Ten demonstrating the SAFES production control and STARS accounting packages. 1500 terminals were also featured.

Privacy proposals 'compromise to please nobody'

THE proposals of the Data Protection Committee, as described so far in unofficial reports (see page 5) appear to be "a compromise to please nobody," according to Ted Cluff, secretary-general of the Institute of Data Processing Management.

He also casts some doubt on the correctness of the reports on the DPC proposals, which say that only computer systems should be controlled. This is inadequate, Cluff says, and claims there are other indications that the committee recommends control of all data handled automatically.

Cluff suggests that the committee has "dodged a number of the issues" by recommending that a regulatory agency set up codes of practice instead of having rules governing data banks laid down by statute. Thus it is unclear, Cluff says, whether citizens will have a right to see and correct information held on them, as they already have under the Consumer Credit Act.

Hugh Pitcher of the National Computing Centre, on the other hand, was broadly in agreement with the "pragmatic" approach of leaving specific regulation in the hands of a Data Protection Authority. The law can be too insensitive to details, he said.

He criticised, however, the notion of blanket exemption from registration for some systems such as those concerned with national security. What was wanted was public accountability, he said, not direct public control, and therefore for every system it should be public knowledge that it exists, what type it is, and who has access to it. Then partial exemptions could be given in situations where the actual information on a system could not be released, as with police or security systems.

● Alan Benjamin on privacy, page 22.

Deadlines put on IBM orders

THE attractiveness of IBM's two latest releases, the 8100 distributed processing system and the System 38 "small" database business machine, has led the company to impose deadlines as a means of "rationing" deliveries. And, despite these two sales successes, more major sales-boosting announcements are expected soon from IBM, including up to four more 8100 models, quantity discounts on the Series 1 minicomputer, a new System 30 between the 34 and 38, and a lower cost version of the 5110 desk top system.

November 30 is the deadline for IBM users in Europe to place orders for the 8100 distributed processing system if they want to stand a chance of a delivery not too long after the end of 1979.

The deadline for System 38 orders was last Friday, November 10, and one of the first UK customers to place an order before then was the Data-Link bureau, which is also planning to set up a System 38 consultancy.

The place of each customer in the delivery queue will be determined by a lottery in the same way that deliveries of the 3031 and 3032 mainframes were randomised.

With the 8100, the situation is made somewhat more complex by the fact that IBM has provided customers with two

"windows" for placing orders. The first "window" closed at the end of October and orders placed before then will get priority over those placed during the second "window."

The predictions about IBM's future announcements were made in London last week by Dale Kutnick, consultant with the Yankee Group of Cambridge, Massachusetts.

Speaking at the Information Studies Ltd conference "Communicating with IBM," Kutnick was adamant that the 8100 announcement (CW, October 12), was but the tip of a very large iceberg.

"I know that there are 8150 and 8160 models on the way and

● Turn to page 2

Bureau service dropped

LOW profitability by IBM standards, looks like the reason for the company's decision to stop selling the Remote Batch Processing service run at its bureau centre at Warwick.

RBP comprises three main applications packages: Prince, Production Requirements and Inventory Control Evaluation; Caposs, Capacity Planning and Operations Sequencing System;

● Turn to page 15

Computers in schools project

MAKING teachers aware of the value of computers as an educational resource, as well as their importance in industry, is one of the main aims of the second phase of the Schools Council project "Computers in the Curriculum," which has just been announced.

The Department of Education has also made this point in a letter sent to education authorities, teachers associations, and industrial organisations, setting out the Department's views on microelectronics.

The Schools Council project aims to produce teaching materials in a range of subjects to help teachers use computers in their course work. This second phase, costing £70,000, has been expanded to include mathematics, graphics and history. Mathematics had hitherto been excluded because of the lack of cheap high-definition graphics terminals for drawing curves and so forth.

Analysis of census data is the main use for computers on the history side of the project. Project staff are co-operating with local authorities to get census data going back to the mid-1800s available in machine-readable form.

According to the DES' letter, the Department is considering the feasibility of a national programme to help schools become fully aware of microelectronics.

COMPUTER WEEKLY'S INSIDE NEWS

WINNING THE POOLS
Predicting football results might seem a long way from cybernetics research. But Professor of Cybernetics at Brunel University, Frank George, believes that the unpredictability of gambling games can elucidate certain learning problems. So he has written a program for the pools which is performing remarkably successfully. Read all about it. ... Page 8

TIGHT CONTRACTS
Part of the mythology of computing techniques is that it is difficult to predict development timescales and performance so it is difficult to put too many specifics into con-

tracts. Tom Gilb, however, believes that the portability or conversion ability of a system should be made part of the contract. ... Page 9

WORKING ABROAD
"Have Cobol, will travel" has always been an attractive inducement for becoming a computer professional, with so much scope for working around the world. In reality, however, working outside the UK can have as many pitfalls as joys, as recruitment specialist John Goldsmith explains. ... Page 12

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Why Super Prestel is not exactly magic

IN the 1930s, the BBC had a world lead in television, but that pioneering work is of little commercial benefit today. So what practical benefit to Britain will accrue from the Post Office's current lead in another mass information medium, viewdata?

At present, the Post Office's Prestel viewdata is offered primarily as a TV-based service for home or office information retrieval. Potentially, however, it provides all the varied options to be expected from an advanced computer-based communications service, including bureau-style operations and even electronic mail.

Having gone through the viewdata learning cycle with Prestel, the Post Office is currently in a position to assist other telecommunications suppliers in setting up similar services by providing know-how, systems and software.

In terms of providing a national public service, Prestel is also probably at least two years ahead of others.

However, when we look at the viewdata concept, as opposed to its short-term implementation requirements, the Prestel lead is less impressive.

Like television, there is "nothing magical about viewdata," as Prestel's international operations director remarked last week (see page 5). Once the know-how spreads, the Post Office will have little to export. So the Prestel export earning potential is a race against time, a race in which rivals, particularly the French, are placing as many hurdles as possible to hinder the European mass-market advance.

Corporations like GTE and Texas Instruments are also getting into the viewdata act, while information services companies such as IBM, Xerox and AT&T are committed to deep involvement in the provision of products and services which overlap significantly with Prestel capabilities.

Perhaps most significantly Prestel does give the UK industry advanced warning that we are on the threshold of the growth of new world markets in information technology-based products and services, ranging from integrated video/computer home "terminals" to markets for the information to be used on

week (see page 5). Once the know-how spreads, the Post Office will have little to export. So the Prestel export earning potential is a race against time, a race in which rivals, particularly the French, are placing as many hurdles as possible to hinder the European mass-market advance.

However, the key challenge being faced by the British and other European PTTs, is the development of adequate high bandwidth telecommunications capabilities; and the European PTTs do not have a good record in this area.

The Prestel back-slapping should also be tempered by the following two omens:

Firstly, a US report (CW, October 12) predicted that there will be a billion-dollar market soon for integrated video/computer home terminals — and it will be dominated by manufacturers like IBM and Texas Instruments, not current TV makers.

Secondly, although the Japanese viewdata system Captains might currently be three years behind Prestel, as the Post Office claims, it is designed to be most effective with high bandwidth techniques — the transmission medium of the future.

The Information Explosion

THE information explosion has a very special meaning for the DP manager. Especially when it is his desk which is bearing the brunt.

DP managers are in danger of being swamped by the flow of printed information. Given the opportunity, most of those involved would welcome the chance to join a Timber Preservation Society.

IPC's Computer Weekly, Data Processing, Systems International and Computer Products International are not alone in claiming space on the DP manager's desk. Overflow contingency plans have constantly to be revised in order that access can be gained to the office.

However, in the process, the digital readout from the electronic calipers provided as part of the display, being very small and at the edge of the picture, was degraded beyond an acceptable level. We did ultimately find a solution to get the best of both worlds, but the problem exemplified the commonly met syndrome (and this week's moral):

Solve a bug, create another
You sometimes wonder why
you bother.
But call it, please, RESEARCH,
and find —
It gives much pleasure to the
mind.

● Submitted by John Davidson, managing director of Graphic Display Systems of Cambridge, who wins this week's £5 Interrupt prize.

'ures and general purpose industry bumph?

It is a brave (and perhaps foolish) manager who consigns all such mailing to the dump unread.

But these print runs show no sign of abatement. On the contrary, as the DP industry widens its sphere of operations into such areas as the electronic office, the DP presses seem to be working in flat-out mode.

Unfortunately, most DPMs are already structured in full-time mode. Time resources are already fully accounted: between adjudicating on demarcation disputes affecting the data prep and control departments, sorting out local user problems or evaluating new equipment, systems or packages, the DPM has to maintain training plans, manning levels, budgets and strategy — apart from such matters as work processing and production. What is needed is a daily publication on the lines of Which Project?

For the DPM there is no escape from the computer world. Whether at the breakfast table or Godalming Station, he finds his daily newspaper now regularly features the computing scene. Even the car commuter is not immune. Computer Weekly and one of London's commercial radio stations have linked forces to present a selection of choice DP jobs. Just in case the message is missed during the morning rush hour, the feature is repeated in the evening.

Fortunately, the DP manager is not as yet under assault from the book publishing world, as a visit to the recent London Book Fair would have confirmed. There among such volumes as Observations on the goat, How to build your own portable garage, and Secrets of staying slim, only one computer publisher, Input Two-Nine, was present. Perhaps the book publishing companies are not keen to compete in a market-place covered by the periodical press.

Next year, Input Two-Nine plans to produce a Who's Who in the DP industry?

If the present flood of publications continue, the series could well be titled Who has the time to read what in the DP industry?

Ten years ago...

COMPUTER WEEKLY NOVEMBER 14, 1968

APPROVAL for the first major project in the UK to take DP into schools was won from the Department of Education and Science, and it was planned to set up a £300,000 system at Hatfield College of Technology, Herts . . . Three groups of Trustee Savings Banks in the Liverpool, Manchester and West Midlands areas were to combine to purchase a computer system . . . The University Computing Co (UK) planned to install a second Univac 1108.

based seat reservation system, Boadicea, was officially inaugurated at London Airport . . . Reports from the US that IBM had been cutting back on 360 production were denied by the company . . . Computer capacity at CMG was to be tripled during 1968 by the addition of two further Honeywell H1200 computer systems . . . The University Computing Co (UK) planned to install a second Univac 1108.

I believe there will also be 8120 and an 8110 below that and 40 so far announced, Kutnick.

Kutnick expected discussion for quantity Series 1 out either within a fortnight or next year and commented its wide range of potential customers, among them word processing specialist Vydec, is only waiting for discount, place a big order. He estimates that 4,000 would have been delivered by the end of the year.

The Prestel back-slapping should also be tempered by the following two omens:

Firstly, a US report (CW, October 12) predicted that there will be a billion-dollar market soon for integrated video/computer home terminals — and it will be dominated by manufacturers like IBM and Texas Instruments, not current TV makers.

In the personal computer market, he said that IBM determined to be in the field. It, "They have had a first orders for the $12 to $15,000 desk-top machine since they announced it in February, and are emphasising sale rather lease, so I expect a little way that half the price in late '80."

The 8100, he said, was IBM's most significant announcement since the 370 which would threat to the minimakers, particularly the smaller hardware models, he anticipated.

However, enthusiasm for 8100 was by no means unanimous at the conference. Consultant David Hebditch — why everyone was so about it, pointing out — were many already a minis with just a capability and more? In this context, he — the need to add additional to expand the number communications lines supplied?

Two UK houses win EEC software portability contracts

CONTRACTS have now been awarded by the EEC in two out of three areas making up its current project on software portability (CW, August 10).

A consortium consisting of Leasco Software, Christian Rovsing of Denmark, and Selenia SpA of Italy has been awarded the study of the common software interface for minicomputers.

And the study on conversion tools is to be undertaken by a team drawn from Software Sciences, CERCI of France, and MBP of Germany.

A contract in the third area, that of the projected European Systems Language, is expected to be announced shortly.

A spokesman for Leasco said that their consortium would be examining ten minicomputers in total, all of which would be European with the exception of DEC.

The first phase of the study would be directed at analysing the major operating system interfaces on each machine. Subsequently, they would attempt to devise a standard and cost it.

A major aspect of the work, he noted, would be to determine whether the incorporation of microprocessors could be used to overcome differences in software architecture.

Leasco would be studying the ICL 2903 and 2904, Ferranti's Argus, and a DEC PDP-11, probably the 11/70.

Minicomputers from Philips, Siemens, Telefunken, and Nixdorf would be examined by Christian Rovsing, while Selenia would be responsible for Telemechanique and Olivetti systems in addition to its own GT150.

'City does not understand high technology'—venture capital chief

FAILURE of traditional sources of finance for small technology-based companies has led to the creation of another new scheme aimed at such ventures, this time from Electronic Associates Ltd. Last week, former merchant banker Dr Stephen Castell announced his new company which also aims at stimulating new business activities (CW, November 9).

Announcing the EAL scheme, which hopes to create a grouping of about ten new companies under its umbrella over the next five years, company chairman Dr Bernard "Pat" Murphy condemned both private and public sources for failing to create an environment in Britain in which new companies can start and flourish.

"Private capital doesn't really exist now," he said, "and though bureaucrats are officially thinking 'small is beautiful,' they have little idea how to achieve this aim."

As for the City institutions and banks, he said that they showed a lack of understanding of high technology subjects and were driven too much by a desire to back only "racing certainties."

EAL has already taken two companies under its wing: Cambridge Electronic Workshop, which manufactures sound systems and communications equipment, and Robel Electronics, which is to produce large screen oscilloscopes.

It is looking to add about two companies a year, in each case taking a theoretical maximum of 55% of the equity, with each new company taking up to 10% of EAL's available resources. The intention is that all the new companies will be attaining £1 million turnovers within five years.

One reason EAL has the money available for this exercise stems from its relationship with Electronic Associates Inc of New Jersey, USA. EAL was, until 18 months ago, a wholly owned subsidiary of EAI. At that time it was bought from the US company by the British directors.

● IBM is to be one member of a working party to be established next month by the London Chamber of Commerce aimed at encouraging large companies to help smaller ones in inner London. Impetus for the establishment of such a working party, to be called the London Enterprise Agency and to include Shell, Marks and Spencer and the Industrial and Commercial Finance Corp as well as IBM, has come from government policies aimed at reviving inner cities and helping small companies.

Call for world probe into IBM bargaining with employees

A WORLD conference inquiring into the promotion of trade union organisation in IBM may soon be held if a proposal by Tim Webb, national officer for ASTMS, is acted upon.

Speaking at an International Metalworkers Federation conference earlier this month in Geneva, Webb proposed that a conference involving IMF delegates from all over the world should start collecting information from IBM on its differing methods of negotiating with employees.

In some countries IBM has employer federations and in Sweden for example, it goes through unions. In some countries it just has staff agreements, said Webb.

An IBM spokesman said, "IBM has collective agreements applying in all 18 countries of Europe, including Israel. In addition, we negotiate company level agreements in several

countries and collective work agreements with work councils on conditions of employment in a few other countries, in line with the laws of those countries."

Webb added that ASTMS has regular contact with the IBM Workers' Association in the US. "It is very much an underground group and we contact them via a post box number and a pseudonym."

China's No 2 calls on ICL

TWO ICL 1900s — a 1905 and a 1903 — have been compiling statistics for the Chinese government since the mid 1960s, but following a visit by vice-premier Wang Chen to ICL in central London this week, the company is hoping to win some major new contracts in the People's Republic.

Vice-premier Wang has been making an intensive tour of UK companies in the high technology, and defence fields, including GEC's Marconi subsidiary, as part of China's quest for the technology it needs to modernise under chairman Hua's new policy (CW, April 13).

FEELING that they are being treated "like gipsies", ICL marketing division managers are taking a dispute on relocation expenses to the independent ACAS conciliation service.

Between 70 and 100 people are involved, and some 60 have joined ASTMS. Transferred from Putney to Bracknell, on acceptable terms, two years ago, they have now been moved again to Slough.

Minicomputers from Philips, Siemens, Telefunken, and Nixdorf would be examined by Christian Rovsing, while Selenia would be responsible for Telemechanique and Olivetti systems in addition to its own GT150.

Cadbury Schweppes gives user view of IBM's SNA

WITH a requirement to enable any authorised remote user to access systems software available on the central IBM mainframes, such as the CICS teleprocessing monitor or IMS database, there was no realistic alternative to IBM's Systems Network Architecture.

This was the conclusion reached at Cadbury-Schweppes after examining the available options, a conference in London heard last week.

Speaking at the ISL "Communicating with IBM" conference (see page 1), Mike Berry, head of computing services that where last time ICL paid two years' travel costs, it now only offered only six months' expenses, with a limited tax-free element. Qualification for relocation expenses is also more stringent.

ICL said it believed that terms compared fairly with those of other companies, but hoped that arbitration would lead to a mutually acceptable solution. Talks on the issue have been going on since May.

would enable non-professionals to write programs, and one with interactive development facilities for DP professionals." Once VSPC had been selected, use of the VTAM access method was required, which in turn dictated SNA.

Berry has a number of criticisms of SNA, notably the Advanced Communication Function, which enables multiple hosts to be accessed in an SNA network. He sees ACF as designed more to confuse the plug-compatible suppliers than to help users, although the multiple host feature is essential to Cadbury Schweppes' plans since they currently have two hosts, a 3031 and a 158, at Bournville.

He conceded that VTAM had improved, but considered that it was still not reliable enough. He has also found implementation of the 3705 front-ends and concentrators to be time-consuming, tricky, error-prone and a weak link in the whole concept, and thought the processor excessively big.

"The prime requirements were a system in which we expected substantial future IBM development, one which featured something like APL which

The interests of Kenneth Warren

WE received an invitation the other day to a demonstration of OCR ScanData's clever new machine that will read handwritten characters. A special attraction of the demo, the invitation said, will be the presence of Kenneth Warren MP, the well-known campaigner for the computer industry in Parliament.

"Mr Warren," we were told, "has expressed great interest in the new development from Scandata or Alpha Handprint OCR and has asked us to include him in the whole of our Press conference and demonstration to get first-hand experience of Alpha Handprint reading."

A pretty impressive endorsement, eh?

Now, the invitation was sent out by a public relations firm called Parsons Tozer & Newton. Interestingly enough, it falls to mention that one of the directors of Parsons Tozer & Newton is Kenneth Warren MP.

Still, I'm sure Mr Warren won't mind me revealing this fact about his commercial interests. After all he is chairman of the Freedom of Information Campaign.

Warren

Keeping it clean in the valleys

MRS WHITEHOUSE would be proud. County councillors in Powys are taking firm action to stamp out the filth that is coming from their computers. No, I don't mean fluff from printer ribbons — it seems lewd and lascivious programming staff have been using the council's computer to print out copies of the Ballad of Eskimo Nell, and even — wait for it — pictures of Raquel Welch.

When shown one of the print-outs, Powys chief executive Thomas Young said, "Powys is a clean local authority. To discover that this sort of thing is coming from our computer is shattering."

Councillor Jim Evans was no less forthright. "We're a good, clean-living community," he said. "There will be an investigation immediately and those responsible will be taken to task."

Good on yer, gentlemen. When you have stuck yourselves together again after being shattered, I'm sure we can rely on you to shore up public morals in Powys. You might tell the culprits that there is no point at all in using a computer for this sort of thing — suggest they use the council's copying machine instead.

By the way, can anyone tell me of a dirty authority where I can get a job?

Go forth and multiply...

PERUSING the latest edition of our industrial bible, the Computer Users' Year Book, I notice that over the last ten years, while the number of installations listed has increased 171% and the number of computers 375%, the number of "consultants etc" has gone up 614%.

Harry Belsey, of BP, has a choice phrase for this sort of thing: "In the gold rush, it's the man who sells the shovels..."

Winning the football pools is a dream to brighten the quick-darkening days of autumn. Forecasting football also poses some interesting systems problems relating to the heuristic "learning" capability of programmed machines to predict the apparently unpredictable.

Frank George, professor of Cybernetics at Brunel University, has been interested for some years in applying heuristic methods to solving certain gambling games.

In this article he discusses football pools system he uses with Dr Roger Hartley and as part of a computer operated by Topaz Books of Great Missenden, Bucks.

How to come up on the pools— by computer

THESE last few weeks have seen a very interesting, if not to say very exciting, state of affairs come about in a relatively new field of activity of computing — programs for football pools.

Our program for football pools, written in Basic, has been running for about eight weeks of, this season on an ICL 1900 system. During the last four weeks it has achieved about 20 first dividends on the Treble Chance, and several hundred other dividends spread over all three of the leading football pools companies.

There may be more, but everyone who is successful does not necessarily tell us. But that there were at least 20 first dividends, we are sure.

I will now go back to the beginning of the story. With the development of heuristic methods in computing that enable the handling of all sorts of conditions of uncertainty, it was clear to me some years ago that we should be able to do a great deal better than chance on any sort of gambling, where some form is available.

In games like roulette, or even more in the case of fruit machines, there is little by way of form, and they are therefore probably fields best left alone. This leaves quite a number of remaining fields and I will in this article concentrate on football pools.

I wrote an early program for a computer some four years ago, but it did not work particularly well and I concluded that the heuristics I very nearly guesses at the time) were inadequate.

I then spent some three years collecting a vast volume of "facts" about football results and constructed a set of Markovian type tables for successive results - home matches, away matches, home and away matches mixed).

This revealed the errors in my original guesses and gave me a firm foundation for making good forecasts.

Helped by Dr Roger Hartley, I then wrote a new program for pools forecasting which gave weights to league position, last match result, last-but-one match result and, if necessary, the result before that.

A further lesser weighting took place for goal difference to try to discriminate the score-draw from the scoreless draw.

It was obvious from the first that any complete pool filled up according to form alone would be useless. This is so because if every club played even approximately to form, almost everyone would win and there would be very little in the winnings.

To deal with this very important problem we add two further one inevitable important steps to the total forecasting process. They are the kind of method used in actually filling up the pools form - we call it n sort) and examples of this are complete "perms", Lit-plans, V-plans, etc.

We then add to this a further "individualisation" stage where the individual punter decides which sort he will use and which "unexpected draws" he will include.

Let me explain first the concept of an unexpected draw. We know that any game could be a score-draw, but some of them we do not expect at all. This is where the best team in the league is at home to the worst team in the league.

We take the view that some of these games will turn out as evident. If there is a history of draws or home wins in a fixture, then we might expect them to continue.

In particular we might expect to find "local derbys" coming out of draws, as the record book shows that they often do.

Then there is the fact that if we put "last away" but game then we ought - this is the so-called "Qualitative test") to distinguish losing 1-0 away to the top team as opposed to losing 7-0 away to the bottom team: the difference is fairly obvious.

This quadrad test records last three home or away teams, and whether or not they score a draw.

Indeed the sequential process is one step more sophisticated and shows, for example, the best chance of a draw is a team with a record Hill is successive home wins against an away team with LLL successive away losing; provided it gets suitable weighted on compilers, whilst government must or private, would have to be registered with the authority.

The database of results each season is updated prior to forecast and updating includes the last two games plus "league" position.

Then the forecast is made. If it is less than eight recycling takes place, the number up to eight is done by relaxing the bonus for a score-draw to increase the number of forecast score-draws.

We then take the best likely draws and mix them. The forecast score-draws are the lines of the chosen set.

So it is that the program updates the club record of its team appearing on the coupon.

We are all the time simulating more information, monitoring forecasts with an eye to modifying the program, and when it is necessary. It has been, so far, a sort amount of "fine tuning" necessary, but no major changes.

● Professor George has described the background of the work in A Better Bet, and the forecast pools in particular is a work called Forecast 3 (Forecast), involves only minor changes, and both bookies and punters and the computer club are in the case of systems where the Topaz Books, High Street, Missenden, Buckinghamshire.

By Prof Frank George

Now to the program, which we have called Forecast. We have now got to a fourth version, known as Forecast 4. It includes the league table in the form of each club with a games played/points acquired ratio.

From this effective league table we go on to an updated database, which shows last result and last-result-but-one, to what we call the quadrad test.

The idea is clearly that we mix some uncertain forecasts; but much less often, with those that we really believe will be score-draws.

We now come to the very important point of the sort. We have forecast, say, 18 matches, and we can label these A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q and R.

We now, from these eighteen matches, select 13, 14, 16 or 18 (or any other subset of 18) where we place the 18 forecast matches in order of priority. This makes it easy to pick out whatever subset is needed.

The organisation of the sort is such that we take every "expected draw" equally often or nearly so), and we combine these with one "unexpected draw" in each "line" (- column).

The main constraints on each line are that it should be composed of nine expected draws and one unexpected draw, and that in any set of 10 lines no two lines should have more than seven forecasts in common. We then have a "complete perm" for each line.

The other phase of individualisation involves using the historical test and the "qualitative test". The historical test is self-

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Standards delay may limit Prestel revenue

DELAYS in reaching international agreements on viewdata standards are being fostered by some of the British Post Office's rivals to try to hold back the 2/3-year lead of the UK Prestel system.

The Post Office pioneered the viewdata concept as a public, domestic TV-based information service (pictured right) and has already earned about £1 million in exporting its know-how and software to the West German, Dutch, Swiss and Hong Kong PTTs, with a number of other agreements due shortly.

But, as Roy Bright, director of Prestel International operations, pointed out at a Press briefing last week, "There is nothing magical about Prestel" and once the know-how had spread there would be little for the Post Office to export.

Within two years, test viewdata services should have started in a number of countries. Yet the next full meeting of one of the major international telecommunications standards bodies, the CCITT, will be in 1980.

Meanwhile, the French, whose Antiope system could rival Prestel in the 80s, are vigorously opposing acceptance as an international videotex standard of the Prestel character set, which is the ISO 646 basic character standard. The French are proposing the international reference version of ISO 646, while the Germans recently suggested a compromise.

● Viewdata news — page 64.

● Comment, page 2.

'Data Protection body should control personal files held on computers'

THE report of the Data Protection Committee recommends that personal files on computers should be controlled largely by a Data Protection Authority rather than by detailed laws, according to the magazine New Scientist last week. The article giving details of the as yet unpublished report was described by the Home Office as "speculation."

In accordance with the views of some commentators that legislation specifying exactly how personal files should be handled would be too inflexible and insensitive to detail, the report recommends, according to New Scientist, that all personal files on computers, whether government or private, would have to be registered with the authority.

However, the authority would have discretion to exempt systems from registration in cases where it was not considered "necessary or helpful".

It would be harder to exempt government systems than private ones, according to the proposals. Police records would not be exempt, but those connected to national security would be. The registered information would be open to the public for inspection, except in the case of systems where the

authority felt that disclosure would be harmful.

The committee's report covers only computer systems, not manual files, since the original terms of reference were limited in this way.

In contrast to what obtains in other countries, there would not be a general right of citizens to have access to files about them. It would be up to the authority to decide in the case of each system whether the operators should be required to disclose its contents.

The workings of databanks would be controlled largely by codes of practice established by the authority. Breaches of a code of practice would be criminal offences for which the authority could take the offenders to court. The court would have power to impose fines or imprisonment, and also make court orders specifying what data users must do to comply with the code of practice.

Disputes over the interpretation of the codes could be dealt with by the authority in formal hearings short of going to court. These hearings could pronounce on users' obligations but would not have the power to impose penalties. Appeals against DPA decisions could be taken to the courts or to the Ombudsman.

Principles would be laid down by statute to govern the drafting of the codes of conduct. Among these would be: subjects of data should know what information there is about them and what purpose it is being used for; data should be accurate and relevant; data should only be used for the purpose for which it was originally obtained; data users should not be subjected to undue extra cost.

Two new word processors from Wang

TWO word processors have been announced by Wang, one at either end of its range of screen systems. At £6,350, the System 5 is a low-cost standalone unit, and the Office Information System 140 is an extension of Wang's shared-logic machines allowing more screens and greater storage capacity.

Wang has also introduced a daisy-wheel proportional-spacing printer that it manufactures itself, and a 425 lines per minute line printer. The xerographic printer is still under development.

Prices for the OIS/140 start at about £20,000, and a seven-screen system costs £45,000, making it fairly cheap compared with other makes of standalone.

The System 5 comprises a screen, twin floppy discs, and daisy-wheel printer. It undercuts the existing System 10A which has hitherto been the bottom end of Wang's range and will no longer be offered.

Voice storage network now in use at IBM

AN EXPERIMENTAL voice storage network for recording and retrieving messages within an office environment is in use at IBM's Yorktown Heights research centre in New York State.

The messages are digitally stored on a 370/168 mainframe with 100 Megabytes of disc storage online with a separate 800 Megabytes storage subsystem. The mainframe runs under VM/CMS, and the voice network system, which is designed specifically for use with touch-tone telephones, is controlled by a System 7 process control computer.

Files of messages can be built up for later retrieval by named parties, and the system compresses long silences so that the playback can be more fluent than the original delivery. Messages can be timed to be delivered automatically at a given telephone, and touch-tone buttons on the telephone handset are used to activate specific commands.

IBM has not said whether it plans to market the system as a product.

IBM is also working on a home computer which is based on videodisc storage and the domestic television set.

Motorola in exchange deal with two French companies

AGREEMENT has finally been reached between Motorola and two French companies, the Sescosem division of Thomson and EFCIS, a joint venture between Thomson and the French atomic energy agency, for a far-reaching semiconductor technology exchange (CW, September 14).

The exchange will be used by the French companies as the basis for two new manufacturing facilities, and since the still-birth of the much negotiated Sescmos project (CW, October 19), this now represents the only aspect of the French government's "Le Plan Composant" to become reality.

Two agreements have been signed by Motorola. One, with

Sescosem, covers bipolar devices such as high speed memories, while the other, with EFCIS, expands the latter's Motorola product capability beyond an existing agreement that covered the 6800 microprocessor.

In both cases, the French companies will manufacture devices as second sources for Motorola's product line, and sell them in direct competition to the US company.

Motorola has made no comment on whether it is to have a financial stake in the two new companies, and denied suggestions that it would be transferring facilities to Sescosem from its own factory in Toulouse.

GILB'S MYTHOLOGY

Control over conversion costs

ALL critical system qualities can be specified in advance of detailed system design. They can be quantified. They can be measured in practical and economic ways during all stages of development and implementation, at least with sufficient accuracy so as to give better result control than with other methods.

One of the critical qualities of any system is the portability, or conversion ability. We might be interested in immediate conversion ability of our present systems to our soon-to-be-delivered machines or software; or we might be interested in controlling costs and human effort for our future hardware/software systems.

When I think about how important this factor is in economic terms, I am surprised to see the informal treatment it is given in practice. The normal method of handling it is to throw a solution at the problem and hope it will go away. Common "solutions" are Cobol, Fortran and IBM. Unfortunately, although these solutions may be better than nothing, they give very uncertain results.

I have recorded a number of major financial disasters which were based on this assumption. For example Ford ended up paying $2.3 million dollars to convert its Cobol programs from IBM 360 to IBM 360 (ANS). Massey Ferguson, of Australia, lost a million

Australian dollars on an MIS development because it was not sufficiently portable to other corporate IBM Cobol machines (particularly those without Virtual Storage).

I have developed a measure of portability which we have used for several years now in system specifications and this includes several legally binding contracts. In one recent case where a corporate accounting package was guaranteed portable to my client's "Computer with Cobol, from a major manufacturer" (which turned out to be an IBM 370/135), the supplier ended up paying a penalty of running the corporation's financial accounting package free of charge for one full year while he completed the necessary rewriting of the 50% Mark IV statements to Cobol, for us, at a nominal charge.

You don't need to know exactly what you will be converting to, as the case illustrates, it is sufficient to know approximately. A portability measure must be specified in terms of source and target environment (both of which can be generalised) conversion-method and means, and the application system in question. In addition it is vital to specify that performance, operational cost, reliability and maintainability also be kept at the same or better measurable levels as before conversion. Philips of Holland learned why the hard way. Their original

plan for conversion of a 200 engineer-man year project IMS database from IBM to Philips computers specified three man-months effort. This worked, but the performance was 20 times worse and unacceptable. The needed conversion effort was in fact between ten and 20 man years (I got two estimates from different sources).

Another fact that many seem to forget, however obvious it is: Conversion is more than Cobol or Fortran program logic. There are files to be converted. Job Control statements, machine language subroutines, and supporting software such as database management software or telecommunications software. Then, of course, there may be operator instructions, recovery and other utility software. One British installation reported 27,000 job control statements to worry about.

Portability can be quantified in terms of percent salvage value. Ninety-five per cent portability between two environments means that only five per cent will have to be expended of what it would cost to build a new system without the benefit of direct conversion from the old logic.

One IBM user I know got £200,000 in cash and equipment from IBM because they knew how to get conversion costs guaranteed measurably.

Get yours too!

The pitfalls of online development

DO programmers really prefer online development systems, or do many in fact hanker for the days of twice-a-day testing shots, albeit at the mercy of abort-happy programs? And which is in practice the more effective?

These are the questions raised by E. W. Tocher, of Southampton, who feels that online development is a path offering many pitfalls to those without the discipline of batch experience.

"I could not agree more strongly with Professor Wirth that 'interactive logical debugging is the greatest destroyer of program quality' (Software File,

PROGRAMMER NOTES

July 20)," writes Tocher.

"I have often seen programmers using interactive tools not only usefully but stupidly. Making one-line changes and re-running in the hope of a clean result is not a route to developing a correct and well structured program."

One factor encouraging users

to misuse the facility is identified by Tocher as the "prescriptive dynamic" of many timesharing systems.

"Under George 3 and MOP, for instance, you are typically logged out after 45 seconds if you haven't made an entry. On a busy system, it can be some minutes before you are again given access."

"The system in this way hurries along terminal users, encouraging them to enter anything rather than be disconnected. This is an example of the rationale of the machine conditioning human users to work at its pace — destroying the

atmosphere of thoughtfulness essential to good programming work."

Tocher notes that fixed-length, pre-allocated terminal sessions also introduce distortions to the development cycle.

"People are only too easily tempted into trying to achieve too much. Alternatively, if they are over-prepared, the session can be frustratingly short.".

Online development systems are now in widespread use. Do others share Tocher's misgivings and what guidelines have programmers found most helpful in their effective use?

Tandem offers end-user query language as extension of its DBMS

AN END-USER query language has been announced by Tandem Computers as an extension of its relational database management system Enscribe.

Called Enform, an unusual feature of the language is that it can be used from within application programs in addition to being invoked interactively from terminals.

Enform, which is non-procedural, can therefore be used as a report generator within programs written in Cobol, Fortran, or TAL — Tandem's own application language.

Reporting facilities, which include automatic sorting, also encompass the production of averages, percentages, and several levels of total. Input can be from multiple files, correlated

in ways unanticipated during database design.

Enform carries a one-time licence fee of £4,700 and requires a microcode add-on costing £1,000 per processor system.

A microcode assist is also required to implement Tandem's new networking capability, Guardian/Expand, which was announced at the same time (CW, November 9).

An extension of the operating system, the networking subsystem makes the location of computing resources and databases in an Expand network transparent to operators and programmers. It can support up to 255 processor systems, each site consisting of up to 16 linked central processors.

Tandem's own communication protocol is used between sites, but Expand also offers support for virtual circuits on X-25 packet-switched networks.

Features of the system include automatic routeing of data, with a tie-break algorithm where two routes are equally cost-effective, and the ability to reconfigure the network dynamically in the event of line failure.

No adjustment is required to current applications programs to enable them to use the Expand facility.

Programs may access data resident at any point in the sys-

tem, and can be run remotely. Expand is priced at £6,700, like Enform, requires microcosting £1,000 on each processor. Both will be available in March.

Puzzler

USING the digits 1 to 9 once each, make up two numbers which multiply together to give the largest possible product. The first logical "try" is 9,876 times 54,321, but this produces a much lower total than the maximum. See page 61 for solution.

● Nioll McPhillips, of Dublin, has sent in no fewer than 40 different solutions to the "mixed fractions" Puzzler (CW, October 5), which required

$$AB\frac{CD}{EF} + GH\frac{I}{J}$$

to equal 100. Maximum "difference" between the two sides, according to his list, arises from the answer

$$86\frac{45}{63} + 10\frac{2}{7}$$

The Gospel according to the Project Manager

AND it came to pass that a Paper committed an Unutterable Plagiarism which was deemed to it by the Reader, and came to it saying "Behold, the Things were first revealed to the Prophet Debbs Kime, which lives across the land and has Knowledge of the Things."

And the Paper repented its Innocent Enthusiasm and in the fear of the Wrath of its distant Editor and his revered Messenger which is also Unoffice.

(Apologies to Datamation and thanks to the reader who spotted that "The Top According to the Project Manager" (November 9) originally appeared in its issue of November 1973 as "Genesis, the 2.6". Our source was incompletely different: we failed to identify the author — Michael L. Coleman.)

German joint effort on DoD1 front end

INDUSTRY and government in West Germany are understood to be planning a concerted effort to produce a portable front end compiler for the Pentagon's new real time language, DoD1.

The aim of the project is to capitalise on German investment in its real time language Pearl while at the same time providing an easy route to using the new US language, currently described by the "Steelman" specification.

The envisaged front end will generate an intermediate code closely similar to Cimic, which is the intermediate code generated by Pearl.

Existing Cimic translators and

Adapted for B1700

THE accounting and management information system Fact has been adapted by CMG for the Burroughs B1700 series. Its general availability follows CMG's implementation of the system on a 96K B1726 prepared by packaging and printing firm J. Dring Ltd.

run-time support systems will thus provide a bridge to the implementation of Steelman on all the machines which currently support Pearl.

This strategy was outlined in London last month by a speaker at the Third Joint European/US Software Management Conference, Dr Horst Clausen, of Industrieanlagen und Betriebs Gesellschaft.

Dr Clausen noted that a major aim of the collaborative effort was to avoid the emergence of a large number of mediocre translators for the language, which could be the result if companies each developed their own.

A high quality compiler, producing compact and efficient code, was essential to the acceptance of the language, he said.

He added that there was no intention at the moment to force existing projects to use the new language, but that would be introduced on a trial basis on selected new developments.

Although the DoD has announced its intention to provide

a "public domain" compiler for the Steelman language, it has not as yet committed itself to the form this will take.

A common front-end, such as already exists for RTL/2 and Systems Designer's portable Coral 66, is a highly effective way to enforce language standardisation and could well be the approach taken by the DoD also.

Honeywell data dictionary

A DATA dictionary has been introduced by Honeywell for use with its IDS/1 database management system on large-scale Series 6000 and Level 66 mainframes.

Called IDS/1-DD, the system is said to analyse source programs to provide information on data element usage. Dictionary indexes, where-used lists, and database chain definitions are among the many reporting functions supported.

The package is also reported to support execution of applica-

tion programs and the collection and evaluation of database performance statistics. These facilities are presumably directed at the restructuring of a database in the light of actual usage patterns.

Requiring 192K of memory for implementation, the package is to be released in the US by the end of the year at a price of $14,500. The company is said to have given no indication of plans for a similar offering under its more recent DBMS, IDS/2.

Informatics' UK consultancy aims for big users

A UK consulting subsidiary has been set up by Informatics, best known for its software products including Mark IV. Called Informatics Consulting, its principal clients will be large IBM, ICL, Honeywell, and Univac users.

Services offered will include systems conversion, hardware and software evaluation, standards development, systems design, and project control.

Informatics has operated a professional services division in the US for many years and began to offer the service in the UK in the middle of last year. Projects to date have focussed particularly on database management systems, including educational courses on IMS.

The operation is based at Africa House, 64-78 Kingsway, London, WC2. Tel: 01-405 8546.

Latest pack to emerge is for routeing

Latest product to emerge from the NCC's Software Product Scheme (see right) is a vehicle routeing and scheduling system developed by Scicon Consultancy.

Called Vanplan, the system has been specially designed for companies running a fleet of vehicles with multi-drop delivery routes. It is written in Fortran IV for operation on a DEC PDP-11 under RSX-11M and is licensed at a basic price of £15,000 for five years.

Fortran Forum

Bookings for the Fortran Forum (Letters, November 2), organised by the BCS Fortran Specialist Group at Imperial College, London, on Friday, December 1, should be made with John Roberts-Jones, c/o Miss Laura Burrell, BCS, 13 Mansfield Street, London, W1M 0BP.

NCC scheme extended to cover limited hardware development

LIMITED hardware development can now be funded by the NCC's Software Products Scheme in the context of packaged hardware/software systems. And the scheme is making it easier for firms to apply for a grant, by funding up to 50% of the cost of proposing to it.

SPS is administered by the National Computing Centre on behalf of the Department of Industry. It can provide up to 50% of the investment needed to develop a software product in return for a share of eventual sales.

"Originally, all our projects were concerned with utility software for mainframes," commented the NCC's Fred Ford. "With the changing marketplace, we have been increasingly involved with applications software, minicomputers, and microcomputers.

"Early this year, there was a definite extension to the scheme to encompass packaged hardware/software systems. We can back such systems as long as there isn't too much hardware development."

Typical hardware aspects of such a project might be the development of special interface boards or terminals, he added.

SPS is currently assisting two companies to develop micro-based packages, one built on the LSI-11, the other on Data General's Micro Nova.

Following a representation on behalf of the software industry, the Receiver of Revenue has decided that the tax does not apply to these products after all.

Cobol. SPS made available around £180,000 for this development, with a similar sum coming from the NRDC.

On the subject of funding proposals, Ford remarked that the mechanism had always been there, but it had not received much emphasis before this year.

"Previously, we felt that if a firm wasn't prepared to conduct a feasibility study for itself, it wouldn't feel that the product was its own.

"If the end product for a feasibility study is a proposal, there is a danger that it will be written for the client. We regard it as very important that a firm sees the proposed product as its own, and is not influenced by ideas of what we might find acceptable."

Ford added that SPS had part-funded two proposals this year and had been pleased that its fears hadn't materialised.

Tax exemption

PROPRIETARY software packages have been exempted from the newly-introduced General Sales Tax in South Africa.

SPS is currently assisting two companies to develop micro-based packages, one built on the LSI-11, the other on Data General's Micro Nova.

The scheme's other major involvement with microprocessors was backing CAP's Micro-

OP SPOT

By Bernard Allen

Central contact point between programmers users and operations

IT'S good to hear an operations person say that her work involves "taking my operations knowledge and using it to the best possible effect."

And it gets better when you learn that her experience totals some five years in the industry and includes a spell as an operations manager.

Janet Hall is the person I am talking about. She is employed as a processing liaison analyst at the Stratford, London, installation of Morgan Guaranty Trust.

"When I saw Morgan Guaranty advertising the position in which I am now employed, I thought they must have the right attitude to operators and decided to give them a try," she said.

Her role involves liaising between operations, programming and the users. (Unfortunately, many sites fail to recognise the benefits to be gained by employing someone to carry out this function.)

Said Janet, "Actually, there are two of us. The guy I work with is responsible for long-term planning and I'm responsible for it in the short term. We set out to ensure that all new applications conform to installation standards."

At present Janet is responsible for six systems which are in the process of development; four are large online applications and the other two are general systems.

A project committee is formed for each new application. Programming, users and operations, in the person of Janet or the other processing liaison analyst, are all represented.

This enables her to work closely with the project team and the users to their benefit and that of operations.

Another part of Janet's work is to ensure that the documentation produced for use by operations is of a sufficiently high standard.

"It's up to us to ensure that all the operations documentation is up to scratch. To see that it has all the information the operators need to run the work," she said.

She is also responsible for ensuring that the operators are lectured on all new applications, well in advance of the time when they actually go "live."

Attention in these two areas gives the operators a good understanding of all the applications and so greatly reduces the likelihood of errors occurring in the operations department.

Janet becomes involved with each project at its design stage. This enables her to draw upon her experience and interpret the system in terms of machine requirements.

She also acts as the "central contact point for all the project teams. For example, if they need a new disc or magnetic tape they come directly to us and not to the operators."

Thus the operators get no interruptions from outside the computer room, and are able to concentrate on running the system and optimising throughput.

Now in the main, users have little idea of what goes on in the computing department. By involving them in the project committees, the Morgan Guaranty Trust site ensures that they understand what happens and have the opportunity to put their views and problems forward.

And Janet Hall ensures that the needs of the users are met and that the addition of new applications does not impair the service they receive from the operations department.

HINT OF THE WEEK

Hardware errors

BY examining hardware problems at a level slightly deeper than the accepted norm, operations staff can do much to increase their knowledge of the equipment with which they work.

Sometimes they will find ways to ease their own task and their company to economise in terms of money costs.

I make these points after considering a hint relating to printer wear and tear on printer ribbons, which is sent by Mr T. Turner who is operations controller at a site in Derbyshire.

He says, "We do not have a great demand for printed output and we use an ICL (Singer) 2412/01 printer which has 132 print positions and produces 150 lines of output per minute."

For over a year they had problems with the ribbons, which would ride up inside the carriage. This led to uneven wear and unit wreaks.

He continues, "We were told by the ICL engineers (who are excellent in all other respects) to try some different ribbons for, as far as they were concerned, the problem was insoluble."

This they did, but with little success "as the usage varied between 17 and 50 hours per ribbon." So they looked up ICL's Hardware Operating manual (figure 28, page 53) and examined the unit.

He explains, "The problem occurred as the ribbon passed between the guide posts of the printer's carriage."

Now, the guide posts are on a cam and can be adjusted via two sockets by means of an allen key.

He says, "The guide posts can be angled and, by experimenting, we can alter the passage of the ribbon and so prevent it riding up or down."

By this means they overcame the problem and "we are now getting over 100 hours' use from each ribbon," he adds.

"The existence of these sockets on the guide posts is not mentioned anywhere and does not seem to be known to the engineers. But the adjustment is simple and quick, and you don't even get your fingers dirty."

Perils of core fragmentation under MVT

SEVERAL weeks ago (Op Spot, October 19) I gave an overview of the IBM OS operating system. And this week I would like to give further consideration to the characteristics of, and differences between, the two versions of the system: OS/MFT (multi-programming with a fixed number of tasks) and OS/MVT (multi-programming with a variable number of tasks).

With the former, main storage is divided into a number of fixed PARTITIONS each of which supports one job at a time.

Under MVT, PARTITIONS are replaced by INITIATORS which take jobs from the input queue and allocate main storage, along with other system resources, in accordance with the needs of each job. Thus the operator merely has to START and STOP INITIATORS as required.

But problems can occur under MVT, for poor operating or scheduling can cause main storage to become "fragmented" and areas of it to become unusable. This is commonly known as "core fragmentation."

To understand the root of the problem, let's consider the manner in which the INITIATOR takes jobs from the input queue and allocates main storage.

Searching from high address to low, the INITIATOR attempts to find continuous block of storage large enough to support the job concerned.

Let's take an example. It's the start of the day at an installation and the system has been loaded but no work has been started. It's a big site and so there are separate work areas for the printers and disc drives, with the card readers and tape decks placed near, and tended by, the main console operator.

So to get things moving, the operators in the disc area start issuing commands to MOUNT discs (the MOUNT runs as a task in storage), the staff in the printer area start some WRITER procedures, which allocate printers to output classes, and the main console operator feeds some jobs into the card reader and calls some procedures from disc.

Remember that storage is empty and so the first job begin at the highest available address, the second job at the next highest and so on.

It's possible that a WRITER procedure will start first (I claim, say 25K. Then a MOUNT procedure might start and take the next 25K. After this the network goes in and occupies 500K.

Next the main console operator is given two batch jobs — requiring 30K, which has to go in to the system and which is started immediately. Meanwhile time sharing applications uses up another 400K. At this point main storage is full — 20K at the bottom end.

Now, all the small job tasks, run for a comparatively short time and when they do, we have three packets of storage of 50K, 60K and 20K, respectively.

What it all amounts to is that although 130K is not being used, jobs needing over 60K cannot run by the system. This has a disruptive effect on throughput.

The way around this situation is to close down time sharing and TP and re-start them, ensuring that they are allocated storage at the top end of the storage. To do this would mean interrupting the service to the users of the systems and would lead to complaints from them.

VDUs and vision

THE relationship between a display units and eyestrain is a theme of a conference to be held on December 15 at Loughborough University of Technology by the Ergonomics Society and the Applied Vision Association.

For further information contact Tom Stewart, Department of Human Sciences, University of Technology, Loughborough, Leicester LE11 3TU.

The laser disc that can hold 10,000 million bits

A SERIOUS challenger for existing data recording methods like tape, disc and COM recording is gradually emerging from the laboratories of Philips in the form of a diode laser optical recording system. Its very high recording density should enable large numbers of digitised images to be mixed on the same disc with alphanumeric data.

The Philips system can already cram an impressive 10,000 million bits on to the two sides of a single 12-inch disc using a compact diode laser read/write head to burn shallow holes one micron in diameter in a tellurium based recording layer. The laser can then be used at a lower power to read data, and the mean time at the moment of accessing a particular address on the disc is 250 milliseconds, although Philips is confident that this time can be reduced to about 70 milliseconds. The company is also sure that the recording density can be increased significantly.

The one big disadvantage of the laser system compared with magnetic disc drives is that data cannot be erased after it has been written, although Philips believes that the enormous capacity of its disc should enable records to be rewritten on another part of the disc after they have been updated. The disc could provide a small business with enough space for a year's updating.

Philips says that it is developing software now to enable the disc to be used with commercial computer systems, although the manager of Philips Data Systems Division, Pieter de Vos, stresses that the disc will not become generally available to users for another two years at least.

Philips sees the laser disc as being particularly suitable for storing images, because of its huge bit capacity, and envisages it being used in the oft-discussed electronic office as an "electronic filing cabinet" holding facsimile images as well as alphanumerical information currently held on paper, microfilm and magnetic media.

Philips was provided with a head start in developing a digital laser recording disc by Video Long Play, the consumer product soon to be put on the market that uses a compact low-powered laser to play back audio and video. The discs are pressings manufactured by Philips from masters created using special high powered laser equipment.

In producing a digital recorder that could be used with computers, Philips had the problem of developing a compact laser that could write as well as read information. The solution was provided by the company's semiconductor division which produced a diode laser employing a chip measuring only 0.1 mm square.

The chip is housed in a read/write head that can fit in the palm of a hand and which also contains all the optics for directing the beam on to the disc and the reflected beam on to signal detectors. The head, in turn, is mounted on the end of an arm that moves the head radially back and forth across the disc.

45,000 tracks joined in a spiral

The transparent 12in disc used in the Philips diode laser recorder holds 45,000 tracks joined together in a spiral and the tracks (see right) take the form of grooves one eighth of a wavelength deep which enable the head to count its way to the track required.

Each of the tracks is divided into 128 individually addressable sectors, and data can be read or written at 300K user bits per second at the current standard disc rotation speed of 2.5 revolutions per second. However, the revolutions can be increased and Philips says that data has been read and written at six million user bits per second.

The 12 inch disc can hold up to 500,000 A4 sized pages of alphanumeric information. Philips has also developed a mini version of the disc measuring 10 cms in diameter that can hold up to 50,000 pages.

Microdata $47m takeover bid

THE complex affairs of Microdata Corp (CW, November 9) have taken another twist with a bid for the California minimaker company from offset litho and addressing machine specialist Addressograph-Multigraph.

The bid, of one A-M share for each of Microdata's 2.3 million shares outstanding, values the company at about $47.2 million. In its year to August 31, Microdata reported profits of $4.1 million on turnover of $65 million.

Starting out as an OEM minimaker with MAI as a major customer for its Basic Four line of business systems until 1973, Microdata branched out into the configured products market with the Reality business system. Models in the Multi series made by Intertechnique of France originate from Microdata licences.

Microdata acquired CMC-UK last year and expressed interest in acquiring CMC companies on the Continent.

CMC-UK already marketed the Microdata Reality system, and also sells the CMC 6000 series of key-to-disc systems which it builds at Hemel Hempstead and the new Microdata Royale file handling system.

Microdata has made no comment on the bid beyond saying that it was under consideration.

In California, Microdata is in dispute with another company, Pick & Associates, over ownership of the Reality software. Pick is importing Intertechnique minis from France in order to market a system which runs a version of the software.

Datasaab man switches

WALLY WELLS, who is prominent in the UK banking automation scene, is leaving Datasaab UK after four years to take responsibility for marketing, administration and sales for General Automation's banking systems products in the UK.

As well as being one of the three approved suppliers of SIDs, Swift interface devices, for the International banking transfer network, General Automation also markets a foreign exchange system called Safe.

Oil service

AN online stock control system has been implemented by Jenson Computer Services, of Bristol, for EPD Services Ltd in Aberdeen. The system, based on a DEC PDP-11, is being used by EPD to provide a bureau service to oil companies operating under the North Sea.

'Industrial democracy only way to meet new technology'

INDUSTRIAL democracy has been highlighted as the only viable way to meet the challenge of technological change in Australia in a speech by Neil Batt, the Australian Labour Party's president, who indicated that a future Labour government would seek it as a price for allowing such changes to occur normally.

Speaking to delegates at a seminar on technology and industrial democracy, in Melbourne, Batt showed attitudes similar to those of the UK Employment Minister, Albert Booth last month (CW, October 12) when Booth stated that he believed legislation should be formulated, acknowledging the right of unions to be consulted prior to the introduction of new technology into any organisation.

The main points of Batt's speech were that the people most vulnerable to technological change should be involved in any changes; that Australia was presently experiencing "disturbing" technological changes; and that the best way to counter the negative effects of these events was the proper application of industrial democracy.

Fast storage for DEC users

A PRODUCT which gives DEC PDP-11/70 users an alternative source of high volume, high speed subsidiary storage devices has been announced by System Industries (Europe). It is based on a special version of the Midas 9400 controller, and offers a discount of up to 50% on the equivalent DEC peripherals.

One-off subsystem prices are £13,750 for a 90 Megabyte system with 11/70 cache bus interface and RP04 emulator, and £17,400 for a 300 Megabyte version. Quantity discounts are available.

Liveware Saga by Dan

ALL HAIL, THANE OF IFIP!

THANK YE — AND WELCOME TO SILICON GLEN!

I SEE THE CURLING SEASON'S STARTED.

WELL NO, ACTUALLY, IT'S THE FINAL TEST FOR OUR MACRO-CHIPS!

PEOPLE AND EVENTS

Edited by Nancy Pocock

European director at Itel

AT Itel International, John Curran has been promoted to European director of marketing services. His previous job was that of marketing manager for advanced systems in the Mediterranean region.

Curran's career in computing began when he left university in the US and went as a systems programmer to Mobil, which sent him first to Libya, then to Italy.

In 1970 he left Mobil and, still in Italy, worked as a private systems consultant for large IBM users, forming his own company in 1975.

He joined Itel in 1977 as an engineering manager in the Mediterranean region. His present responsibilities cover not only eleven European countries, but also Israel and the Middle East.

Mike Pegg has become manager of the London branch of Wang, with special responsibility for the VS computer. He is replaced as Southern branch manager by Alan Davis, who was a Top Achiever salesman with the company.

Michael Sayer has joined Rair Terminals as a sales engineer for the DECwriter, Diablo and Hazeltine terminals and the Black Box micro. His last job was as manufacturing program controller with GEC.

Peter Gilbert, formerly branch systems support manager for the North-West of Britain and Northern Ireland with Burroughs, has been appointed systems and programming manager of Computer Facilities Software.

UK support manager of Wang is now Reg Broughton, who joined Wang in January. Paddy Byrne, previously systems software support manager, has become marketing support manager.

Twentieth anniversary
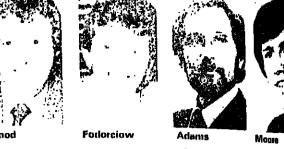
THE Conference on Data Systems Languages (Codasyl) is to celebrate 20 years of operation with a two-day meeting in Arlington, Virginia, next May. The focus of the meeting will be Codasyl's impact on the user community, which began with its initiative to develop Cobol in May, 1959.

More recently, Codasyl has been best known for its recommendations on database management systems and earlier this year launched a new project to develop a standard job control language (CW, March 16).

Further information on the meeting is available from Mrs Nonnie Robertson, Honeywell Information Systems, 7900 Westpark Drive, McLean, Virginia 22102, USA.

George Clay has been appointed engineering manager of Beckman Instruments. He was previously service manager of the clock and watch division of Smiths Industries.

Clive Jones and Alex Ray, of Citibank, both formerly resident vice-presidents, have been promoted, respectively, to vice-president in the personnel group and vice-president in the operating group.

Wood

Bob Fedorciow, previously an analyst/programmer at Sate Computing, and Alan Wood, former Datasol sales executive, have become sales executives with Sate.

At Borer Data Systems, Roger Adams has become sales manager. Previously he worked for the parent company, Borer Electronics of Switzerland, and before that was a business analyst with BOC Gases Division.

Derek Strath, now financial controller of Rediffon Computers, was previously in the same position with the AEC plant of Leyland Vehicles. Owen Smith joins Rediffon as senior territory manager for the financial branch of central accounts, from Olivetti where he was an account manager.

John Burrett joins Dymo Business Systems as national sales manager. Farrington division, from Data Card where he was plastic card division specialist. Ian Johnson and Neil White become international sales managers with Dymo.

Fedorciow

Adams

Moore

John Fisher, who was a field service-manager at Don Rad, has joined Borer Electronics as a sales engineer. Dave Curl becomes a technical support specialist with the same company, Borer being mainly a product application engineer.

Alan Moore has become financial controller with Memory International. Previously he was audit manager with chartered accountants Cooper Magnires.

Ray Bareham, formerly a Business Systems, has become a sales representative with Vydec, covering Greater London.

New address

SYSTEMS and programming contractor IPS Information Processing Services has moved to new offices. 6D, The Crescent, Plymouth. Further details from Geoff Pile, Plymouth 24302.

DIARY

NOVEMBER 19-22
Micro II. IEEE. Computer Society. Monterey, California.

NOVEMBER R 20
Computer languages, the way ahead. Tony Hoare. BCS Nottingham branch, Chemistry Bldg, Nottingham University. 19.15.

Conceptual complexity seminar, Prof A. van Wijngaarden, University of Manchester Computer Bldg, University of Manchester. 14.30.

NOVEMBER 20-22
Developments in distribution switchgear, conference. IEE/IEEE/IMA, Savoy Place, London WC2. Register with IEE. 01-240 1871.

European data communications policy, conference Intutech, London.

NOVEMBER 21
Minitel, a general solution to the local area network problem, D. G. D. Cain. R.C.S. Meeting, BCS Data Communications Group. Polytechnic of Central London, London W1. 18.00.

Portable communication systems, colloquium. IERE. Royal Institution, London W1. 10.00. Registration necessary, phone 01-388 4071, ext 34.

Formal specification of organisations. R. Stamper. BCS Formal Aspects of Computing Science Group, Polytechnic of Central London, London W1. 18.00.

How decisions get made in managing projects, seminar Association of Project Managers, Waldorf Hotel, London WC2. 14.00. Details AYM, 01-398 3182.

Newspaper survival, past, present and the electronic challenge. J. Lindsay Smith. IEE, Savoy Place, London WC2. 17.00.

Microprocessors, IEE, King Edward Grammar School, Chelmsford, Essex. 18.00.

NOVEMBER 22
Database management systems and information retrieval, Elizabeth Barraclough, Prof Peter King, BCS Information Retrieval Group/Aslib Informatics Group, City University, London EC1. 14.00.

Visit to Ford Motor Co. BCS Hampshire branch Swaything, Southampton, 14.00. Information engineering and electronics, F. J. M. Laver. IEE/IERE, St Mary's College, Cheltenham. 19.00.

Databases. J. Draffan. BCS Teesside branch, Teesside Polytechnic, Middlesbrough. 19.00.

Programming languages 1. Dr J. Larmouth. J. Lucking. Polytechnic of Wales/BCS S Wales branch. Polytechnic of Wales, Treforest. 14.15. Details (0443) 405133.

Electronic funds transfer, the role of Bankers Automated Clearing Services. R. Hope-Smith. BCS Wolverhampton branch, The Polytechnic, Wolverhampton. 19.30.

Visit to Manchester Computer Workshop, BCS Manchester branch. Hanging Ditch, Manchester. 18.00. Numbers limited, contact R. Baker, 061-928 8471.

The use of computer graphics in television. Colin Chessman. BCS Edinburgh branch, Mountbatten Bldg, Heriot Watt University. Edinburgh. 17.30.

NOVEMBER 22
Database management systems and information retrieval, Prof Peter King. Elizabeth Barraclough. BCS Information Retrieval Group/Aslib Informatics, City University, London EC1. 14.00. Tickets £1. Maine Met afferty, tel 01-828 4661.

Signs direction and use of logic in number analogue digital computing, seminar. IEE, Savoy Place, London W1. 01. Register with IEE 01-240 1871.

Recent developments in process control, colloquium. IE Place, London WC2. 10.30 Reg. IEE, 01-240 1871.

NOVEMBER 27-28
CAD of digital electronic circuitry, symposium. EE Conference. Hilton Hotel, Brussels, Belgium.

NOVEMBER 28
Computers in engineering, Lang, William Elliott. Key R.I. Institution of Mechanical Engineers. 1 Birdcage Walk, London. 11.00.

The role of large computers. Prof Frank Sumner. BCS branch West Cliff Hotel, Bournemouth. Sea. 19.45.

NOVEMBER 29
New technology and its effect on laser printers and distributed printing. IEE SM reform Group. NCE Marylebone Road, London NW1. 18.00.

NOVEMBER 27
The use of Mumps in the NHS. Health Service, seminar BCS London Group, London H Hygiene & Tropical Medicine W1. Apply before November Council, tel. Brentwood 2285 off.

NOVEMBER 23
Local Authorities Group meeting, IBM Computers Users' Association. Town Hall, Talbot Road, Stretford, Lancs.

Online stock recording at Perkins Engines. British Production and Inventory Control Society. Royal Overseas League, London SW1. 18.45.

The Lancunet telecoms network. P. J. Kelly, H. RI., London School of Hygiene & Tropical Medicine, London WC1, 17.00.

An introduction to dataflow computing. Dr P. Osmon. BCS South-West branch, Bournemouth House, Winford Hospital, Exeter. 19.00.

NOVEMBER 24
Semantic coherence as the basis of language of understanding, Dr Y. Wilks. Computation Linguistics, University of Oxford. Dept of Experimental Psychology, South Parks Road, Oxford. 17.00. Details: Mrs S. M. Huckey, tel 0865 56721.

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Xerox Alto at the White House

REPORTS from the US indicate that the Xerox text processing machines on trial in President Carter's office are in fact Alto minicomputers, and not a new product as had been supposed (CW, August 24). Since the Alto is a research machine and is now four years old, the assumption by many observers that here was the prototype of a new product about to be put on the market appears to be incorrect.

The Alto was designed at Xerox's Palo Alto Research Centre specifically for use by staff there, as a quick way of bootstrapping the firm into R&D on advanced text handling. It is a mini with a high-resolution bit map display, which means that each point on the screen corresponds to a bit in memory. During each screen refresh cycle the memory is read and the information transferred to the screen. This gives great flexibility for graphics; character fonts and the like are controlled entirely by software.

A great deal of sophisticated text processing software has been written for the Alto, including the Smalltalk interactive language (CW, December 1,

1977). A special network, called Ethernet, has been constructed to connect all the units at PARC together, and a minimal five Megabit Ethernet is linking the two machines that have been installed on an experimental basis in the Executive Office Building in Washington.

Xerox would not consider selling Altos as general purpose minicomputers, if only because it has already withdrawn from the computer business with the selling of Xerox Data Systems, and has no support organisation left. To be used as part of an office system product, the Alto would have to be re-engineered and modernised considerably; it was not after all designed as a product and its components are expensive. It is microcoded to emulate a Data General Nova, which is not particularly relevant for a product.

The machine is still ostensibly secret, although it has been used by a good number of Californian schoolchildren for learning experiments, and one has been given to the University of Rochester, New York, near Xerox's main base.

A new manager has been appointed for the prestigious Palo Alto centre. He is Robert Spinrad, who has hitherto been working in El Segundo, a suburb of Los Angeles, on the development of new products for Xerox Business Systems. He replaces George Pake, who moves on to head all of Xerox's corporate research.

PARC concentrates on developments that are far from the

real marketplace, producing advanced office systems and doing pure research into the learning process, and the like.

The formation of Xerox Business Systems (CW, November 2) to handle all the firm's products that are not copier/duplicators means that responsibility for word processors such as the 800 and 850 has been taken away from what was the Office Systems division in Dallas, where development was going along very different lines from PARC and El Segundo.

XBS also operates Xerox Computer Services, an all-in bureau service that provides both computer time and programming for businesses, local government and the like. It has about 600 customers at present.

NEWS IN BRIEF

Popular courses

APPLICATIONS received so far this year for places on university computer science courses are 49% higher than at this time last year, according to the Universities Central Council on Admissions. Engineering courses are also more popular, with a 38% increase. Overall, 5% more women have applied to UCCA, but 3.6% fewer men.

Japan database

ESTABLISHMENT of a national Japanese database covering scientific, medical, political and economic abstracts has been proposed by the Japanese Minister of Posts and Telecommunications, Yasushi Hattori. Acknowledging Japan's weakness in the field, the Minister proposes that methodology and information retrieval software should be acquired from one of the large US database operators like Lockheed or the Library of Medicine.

Takeover talks

THE US timesharing bureau, Comshare Inc of Ann Arbor, Michigan, has entered negotiations with Polysar, the Canadian government's development organisation, that could lead to the US firm taking a 100% holding in Comshare Ltd, the London based bureau. The UK firm is currently owned jointly by Polysar and Comshare Inc.

NCR ballot likely

A BALLOT of NCR employees now looks likely after the intervention of the independent arbitration body ACAS into the bid by ASTMS to gain further recognition and representation within the company. ASTMS already has bargaining rights for NCR field engineers, but it is now seeking to represent all employees.

Packet net for 3270 users

PACKET network operation will be possible for IBM 3270 users through the 9100 series Network Interface Processors developed by Cambridge Telecommunications in the US.

The Zilog Z80 based 9100 converts data in IBM's Binary Synchronous Communication format from a 3271 controller into an HDLC format bit stream for transmission over an X25 packet network to an IBM mainframe with a 370X front-end processor running Cambridge's DMEP software.

The formation of Xerox Business Systems consists of two models. The 9101 takes input from up to four BSC lines and outputs one X25 compatible data stream at up to 9,800 bps. It costs $7,800. The 9102 inputs from up to 32 BSC lines, outputs up to four X25 compatible data streams at up to 56K bps and costs $18,500. The DMEP software costs $500.

First deliveries are scheduled for early next year, but Cambridge does not as yet have a European agent.

Siemens' answer to E-series

THE formidable range of new computer offerings from Siemens (CW, November 9) complement the company's innovative new offering at the bottom end of the 7,000 series, announced earlier this year (CW, June 1). This is Siemens' answer to IBM's still unannounced E-series and consists of two models, the 7.708 and 7,718 shown here.

The smaller model can be field upgraded to the larger, and the processor is a new one, built in TTL technology. There are separate input-output and maintenance processors which are built around the AMD 2901 four-bit bit-slice micro.

The machines feature an enhanced version of the BS2000 operating system, supporting screen-oriented transaction and interactive processing as well as local and remote batch.

Mastery of 10 commands is enough to make use of the system, and most applications can be handled using 33 commands. Languages available include RPG, Cobol, Fortran, Algol, PL/I and Basic.
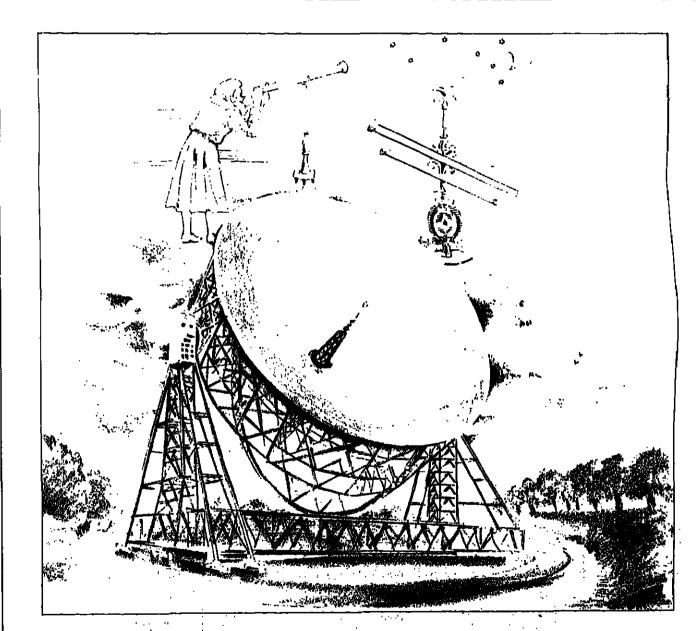
Success breeds success

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machines, we have node processors, networks composed entirely of our hardware and networks mixing ours with others. We have multi-access and transaction operating systems and first hand experience of packet switching.

So if you are looking into the subject make sure that one of your first communications is with us. Our UK Sales Manager is on 01-953 2030 ext. 3799 and our Export Manager is on ext. 3478.

UK launch of OCR scanner

AN Intel 8080-based OCR scanner from Hendrix in the US has been launched in the UK by General Audio and Data Communications of Tring, Herts, for £9,000 to £11,000, depending on interfaces.

Called the Typereader, it reads OCR-A and OCR-B typefaces and outputs 5, 6 or 8 bit code, which can go to a paper tape punch or editing terminal for use in telex, typesetting or word processing applications.

EEC tariffs result in 'export' of jobs

TARIFFS imposed by the EEC ostensibly to protect its own industries are having the effect of 'exporting' jobs, according to the Business Equipment Trade Association. This is because raw materials and basic components are charged a higher duty than finished products, says BETA president Andy Andrews in the association's annual report.

As an example, BETA cites microcircuits which, when imported on their own from the US or Far East, pay 17% duty. Assembled printed circuit boards, on the other hand, pay 10% duty. This means it is cheaper for British firms to have their assembly done overseas, contributing to home unemployment.

The same applies to steal, the price of which is being held high under the Davignon Plan to protect EEC producers, encouraging firms in places like South Korea to send us finished products, filing cabinets and the like, so harming our own manufacturers. Andrews added that a major

problem facing his members was 'the failure so far of the electronics components manufacturers in Europe to meet our industry's needs for electronic micro-circuits," requiring them to be imported against these high tariffs.

BETA has been protesting about the increasing practice of local authorities of forming purchasing consortia which then impose "onerous" and "uncommercial" terms in their orders for supplies. An example of this would be an authority ordering goods ostensibly for itself and then announcing that some of the goods are to be delivered to a different authority at the other end of the country.

BETA complains that if suppliers were to band together in this way they would be in breach of the Restrictive Trades Practices Act. However, the association reports some progress in persuading local authorities to set more reasonably in this respect.

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Holding Company: The General Electric Company Limited of England.

Pitfalls that can face job-hunters in foreign parts

WORKING in Europe is fairly straightforward and presents far fewer problems than other areas. This is because applicants can more closely relate themselves to the European style of life.

However, Europeans usually work longer hours than we do in the UK. They start earlier in the morning and often finish later in the evening.

Sometimes European employers regard the UK as a place to come to recruit labour at a lower rate than they would pay their own nationals. This is something one should be wary about. Salaries indicating many thousands of francs per week can be very misleading. The cost of living in Europe, as we all know, is certainly higher than in the UK.

Language is a problem in some places. In Holland and, perhaps, in Belgium you can work quite successfully just speaking English, although there isn't any way you are going to achieve a senior position unless you learn the local language. However, in France and in West Germany you will find it very difficult indeed to make progress without learning the language.

I would suggest that when seeking employment anywhere in the world, you should check on the financial stability of your potential employer.

Integration in every respect is absolutely essential. Do not expect to come back every month "to see the family." The family should be with you. Many employers would consider this a significant distraction if they felt their staff were constantly returning to the UK. They are looking for people who are committed to working for them in Europe and this should be borne in mind.

Unfortunately, the British reputation for hard work has not always been obvious to Continental employers. They are becoming increasingly concerned about employing people from the UK. Whether this is justified or not I do not know. Perhaps one or two isolated incidents are the reasons for this thinking, but certainly we have found in Holland that the interest in us as a computer nation has certainly waned. Again, one must not generalise.

I believe that the opportunities in Europe are very good and in years to come, the idea of going to live permanently in Belgium or in Holland, or in France, will not seem the colossal move that it perhaps appears today.

One of the more interesting opportunities now available in Europe is a chance to join international companies which have their headquarters in Belgium, France and Holland.

The Middle East is different. In almost every facet, the local way of life is alien to what we are used to and so is the standard of living.

Do not go to the Middle East unless you have an opportunity to talk to the actual company you are going to work for. Many things can be misunderstood between agents and client and

By John Goldsmith

own, etc, whereas in Kuwait you can lead a fairly normal life.

Check carefully on the fringe benefits available. You should be offered at least one holiday per year with free travel to the UK or some other place of your choice. If you are not offered this then I would suggest you may be ill-advised to go.

Also check to see whether there is any support from the education point of view. How often can your children be left at home or flown to the Middle East at companies' expense?

Recruitment in North America is, of course, different. One is usually emigrating. It is probably wrong to talk about North America; we should talk about Canada and then about the US. They are two very different places.

The quality of life in Canada is very high. The cost of living is surprisingly, is probably very much higher than it is in any country and housing is dear. However, again your Canadian employer is looking for something special.

Why should he recruit a month experienced in the UK when he can find a Canadian? He is looking for somebody with significant technical experience of some kind or other.

It would seem to me that a majority of Canadian companies' people are more technical and the people in the UK. The quality of interviewing is high order.

Bear in mind that in Canada you are not acceptable to an employer, then you can be dismissed.

They do not have the same employment protection we have and this has to be faced. A week's notice would not be unusual.

The climate in Canada is far more extreme than here. However, we have found that people we have helped to find overseas have accepted them easily. I know very few of the applicants who have resettled from Canada.

Be very careful when we offered jobs in the US. We had one unfortunate experience of someone who foolishly sold his house, gave in his notice to his employer and then found that the work permit was slow to take longer to come through than he had imagined.

Do not sell your house, give in your notice until you are sure you have the work permit.

The cost of living in the US is certainly higher than in this country. However, incomes are also much higher, but if you think you are going to think you are going to save $30,000, when you leave here at $30,000, for 18 months' programming, then you are wasting your time.

We have found that when Canadian employers, and the UK recruiter the same interest they pay 'people' fraction locally.

One final point, I strongly surprised by the willingness of overseas companies to employ older people. One sad reflection of this is a most satisfying thing a 50-year-old man experiences for a newly programmer in Kuwait.

> **❝ If you feel that the lack of liquor, the often monastic existence that one has to put up within the Middle East is not acceptable to you, then don't go. ●**

as an applicant, you cannot afford to get things wrong.

There are many things that you have to be sure of before you go there. One of the most important, however, is that you will almost certainly need a driving licence.

Many Middle Eastern countries work six days a week, their "weekend" being on Thursday or Friday. A large number of the installations for which we have recruited only have Friday off.

It is also important to find out the quality of the accommodation one is going to be provided with. I know someone who recently went to Saudi Arabia and when he arrived in Riyadh, was put in a flat with eight other people. It took him some time to achieve a more acceptable quality of living.

Middle Eastern laws are very different — and if you don't obey their laws you will be in trouble. Therefore, if you feel that the lack of liquor, the often monastic existence that one has to put up with is not acceptable to you, then don't go.

However, you can usually earn a lot of money that is tax free and it is a way of accumulating substantial funds.

Recently we have recruited for a number of substantial and progressive Arab companies. A particular company in Kuwait comes to mind, where they are recruiting people in the UK on a career basis. They don't expect people to go out there for six months and then come back. They want people to go out there for a long period of time and commit themselves to working in the Middle East.

The career opportunity can be extremely challenging and one is not going to suffer in any way by being out of the UK, as the hardware and systems being developed are in many cases more advanced than some of those here.

I believe that during the next months and years, we will, see many more people going to certain parts of the Middle East for long periods.

The position of the female in society there is very different. It is difficult to appreciate what this means unless one has actually been there.

The difference between, for example, Saudi Arabia and Kuwait is considerable. In Saudi Arabia a woman cannot drive her car or go shopping on her

MICRO NEWS

Fairchild puts £350,000 into UK marketing of 9440 16-bit family

A COMMITMENT of £350,000 is to be made by Fairchild in the UK to support the marketing of its 9440 16-bit microprocessor family. Though first unveiled in the US by the company nearly two years ago (CW, January 13, 1977), the device has only now been formally introduced on to the UK marketplace. The delay, according to chief technical officer Tom Longo, has been due in part to a long development programme for software for the part. This was released earlier this year as FIRE, the Fairchild Integrated Real Time Executive. The part was originally developed as an emulator for the Data General Nova minicomputer, and has since become the subject of both suit and counter suit between the two companies. It is still, according to Longo, compatible with the Data General equipment.

The £350,000 will be used to set up a separate marketing and support organisation for the 9440 family to cover the Northern European area, which is managed from the company's UK headquarters at Potters Bar by Peter Turner. Similar organisations are being planned for the central and southern European areas.

Manufactured in Fairchild's proprietary Isoplanar Integrated Injection Logic, the 9440 hardware family consists primarily of the microprocessor itself, and a single board system based on the device called Spark 16.

This is a stand-alone system that comes with 4K words of memory. It has provision for a variety of firmware packages, including the Firebug debugging package, Baby Basic, and two types of PROM Autoload.

Imminent hardware additions include a range of support circuits, such as the 9441 memory controller and the 9442

I/O bus controller, and a two-board microcomputer system, called Flame 16.

This Nova 3 compatible system uses Fairchild's macrologic micro-programmed CPU, memory control logic, memory parity logic, memory mapping logic and I/O bus converter circuitry.

Memory capacity is 32K words, equally split between the two boards of the system, and this total can be quadrupled by replacing the 4K RAMs with pin-compatible 16K devices.

Next June should also see the introduction of the 9445 microprocessor. Also a 16-bit part, it will have a compatible instruction set to the 9440, and will add facilities for on-chip hardware multiply and divide, extended addressing up to 64K words, a self-test capability, and stack manipulation, making it compatible with the Nova 3 minicomputer.

Longo says that it should offer a factor of four performance improvement over the 9440, operating at the same 10MHz clock rate. He added that this figure was in fact likely to be greater, for the 9445 was being designed to operate at around 15MHz.

Both the Spark 16 and Flame 16 systems can be fitted into a packaged system called Focus 16. This is a chassis and front panel package intended primarily for the OEM market.

The FIRE software already available includes such packages as Fireload, Fire diagnostics and Firebug, and is complemented with both the baby Basic and a full business Basic. Several additions are in development, including a floppy disc operating system, and compilers for both ANSI Fortran 77 and Pascal high level languages. These compilers should be available about March.

Intel's single board family uses 8086

A NEW version of its single board computer family based on the 8086, 16-bit microprocessor has been announced by Intel.

The board, known as the iSBC 86/12, follows the lead set by the other members of the system family by being compatible with the Intel Multibus. This, says the company, provides the first opportunity to interface both 8-bit and 16-bit microcomputers on the same bus.

Supporting a 1M byte address space, the new board can be configured with the full range of expansion boards that make up the SBC range.

With software development supported by the Intellec Series II system, one significant board to be introduced concurrent with the SBC 86/12 is the iSBC 957.

This is an interface and execution package which permits software modules developed on an Intellec to be downloaded to the SBC86/12 for full execution and debug.

The functional capabilities of the board are accommodated by an expansion of the Multibus structure to support 20 bits of address and 16 bits of data.

The memory capacity of the board includes 32K bytes of dual port dynamic read/write memory, together with sockets for up to 16K bytes of ROM.

Multi-user Basic offer to micro system builders

SOFTWARE supporting multi-user commercial Basic on major Intel and Zilog microprocessors is being offered to micro system builders by Panatec Inc, a software house based in Orange, California.

Called Pana/Basic, the software includes a time sharing operating system, an Extended Basic language processor, and a comprehensive file management system. All the software runs on the Intel 8080 and 8085, and the Zilog Z80, and is currently being adapted for the Intel 8086.

Three manufacturers — Applied Data Communication, Micro V, and Sord — have already been licensed to incorporate the software in their systems, according to Panatec.

With a year's field testing at over 50 sites, the firm is now prepared to market the system "nationwide and worldwide," said a spokesman.

Targeted at commercial applications, Pana/Basic is notable for the power of its file handling and character handling facilities.

It supports three file organ-

isation methods — sequential, direct, and indexed sequential — backed up with facilities for multiple concurrent access.

Four internal data types, extensive string handling capabilities, and Cobol-like facilities for data item editing are further significant features.

Pana/Basic is typically licensed in the US for a flat fee of $10,000 plus a royalty on each equipment sold.

Southampton store

A NEW showroom and office in central Southampton was opened last week by Xitan Systems.

The company, which has been in business for over a year, is an authorised dealer for both Commodore, with the Pet system, and Comart, which is UK distributor for Cromemco, Sol and North Star. Hardware from these companies is now on display in the shop, together with examples of the Info 2000 floppy disc subsystem for S100 bus systems, which Xitan is importing directly.

Widening gaps in the pay scales between the private and public sectors of the computer industry recently spurred the Society of Civil and Public Servants into action. It has put in a claim for increased computer staff allowances — the second within 12 months. So far, the claim has not succeeded, but as Campbell Christie, deputy general secretary of the SCPS explains, his union is ready to fight, as he tells Robin Webster.

Why Civil Service DP staff must break 5% pay limit

MAJOR government computer projects, both operational and under development, are faced with the threat of being run down or indefinitely shelved if scenarios being discussed within the Society of Civil and Public Servants about the effects of trained Civil Service computer personnel leaving to work in the private sector become a reality.

In a bid to stem the current flow of staff, the SCPS put in a claim (CW, September 28) for increased allowances for the 8,000 programmers, systems analysts and operations supervisors it represents. The claim sought to lift the scales from £150 after one year's service, £300 after two years and £600 after three years, to £250, £500 and £1,000 respectively.

But as Campbell Christie, deputy general secretary of the SCPS explains, government pay restrictions have proved an insurmountable barrier.

"The Civil Service Department has given us a negative response to the claim," he said, "and this is due to the present incomes policy. We are now seeking a senior level meeting with them at which we will continue to press for these increases. There can be no compromise.

"This latest claim has been lodged because we want to arrest the wastage of computer people from the Civil Service, mainly to the private sector.

"The drain came about because, since 1975, Civil Service pay has been negotiated rigidly within the government's guidelines, so we have had exactly what is allowable. Obviously, this hasn't been the position within the computer industry in general — they have found ways of improving the salary for various posts.

"The result is that Civil Service pay rates are not competitive. They are not competitive generally, and they are not competitive in the computer area. It is brought to a head more dramatically in the computer area of the Civil Service because these people have a skill that is immediately marketable outside."

However, despite the guidelines, the SCPS has made many efforts to win better wages for its members.

"We didn't think government policies were a way to resolve the country's economic problems," said Christie, "but as part of the TUC we were duty bound to go along with the agreement that there was for a time between the TUC and the government. When the TUC broke away from the agreement we were free to campaign for a proper pay settlement and in support of this we took strike action last November. We were not successful, so we were forced to settle, because everybody else was settling, for a Stage 3 increase only. Even with that, we were beginning to recognise that our computer staff rates were particularly out of line, so we lodged a claim at the beginning of this year asking that their allowances be improved. We didn't specify the amount of improvement we wanted."

Extra money was awarded, but only in the form of the third level of £600 which was added to the then two-level allowance structure of £150 and £300.

"In fact, others in the Civil Service had to have a bit less in order to provide for that," said Christie. "There was about 0.5% of the wages bill available for consolidation and additional things and although this did go partly to computer staff, we then said that it was not adequate to arrest the decline in trained computer staff that we were experiencing."

Actual wastage levels recorded by the SCPS and CSD show that turnover is high.

"The two sources show that wastage has grown so much that in the last figures that we have, for the quarter ending June this year, the wastage rate for programmers and systems analysts was running roughly at an annual rate of 20%. That dropped a bit in August, but the indication from our branches is that it is picking up again and accelerating. So the prospect is that if it accelerates through this winter and into spring, we will have to run on through to the winter of 1980 before anything can be done due to the rigid application of incomes policy limiting us to a 5% increase. With the growth of demand in computing generally in the Civil Service, the prospects are horrendous."

The potential seriousness of the situation can be highlighted by the fact that many of the 8,000 SCPS computer staff are deployed in essential areas within the Ministry of Defence.

"The Civil Service is the biggest single employer of computer staff in the country, and the Ministry of Defence is the biggest of the departments employing data processing staff. So the effect of staff losses is significant in the MoD," explained Christie.

Apart from unclassified work like the processing of pay data for the armed forces, were any classified projects at risk?

"There are people working on projects essential to the defence of this country," replied Christie. "But that is only one element of it . . . the growing additional element is that the whole range of government departments that use computers is at risk. The

Inland Revenue department, for example, is developing two major computer projects: one which is due to go live fairly soon is the collection of all tax; and the other, still in its early stages, is the computerisation of PAYE. But perhaps more immediately significant is the keeping mounted projects that are now running. The development of computer systems for the payment of pensions and child benefits are two expanding areas that may run into difficulty if we can't keep up the required level of maintenance.

"The nonsense is that the people who have to run these and other government projects are having to do so with their hands tied behind their backs because the staff they train, when trained, don't find Civil Service pay attractive because it is artificially held back, and so they leave. That puts projects at risk."

The further complication to the situation was that "We are fixed with the classic dilemma of Civil Service management, those who have to deliver services to the public, saying that we should do something about this, while the managers of the country's economy, who are also in the Civil Service, are saying that we need to have an incomes policy and as government we must enforce that policy absolutely."

● With the growth of demand in computing generally in the Civil Service, the prospects are horrendous. ●

Welsh order

AGAINST competition from ICL, Data General and Olivetti, Burroughs is to supply a 128K B1825 processor to Montgomery District Council, Powys. The system will have 130 Mbytes of disc storage, two in-house Burroughs TD 831 terminals and two others, a TD 811 and AP 320, at remote locations.

Councils sign with Datasaab

CONTRACTS for Datasaab financial terminal equipment worth £225,000, have been signed by five local authorities. The largest is with the Sefton Metropolitan District Council, which has ordered four Datasaab processors, each with half a Mbyte of disc storage, 14 cashier workstations and five remote terminal adaptors.

Each of Sefton's D5/20s will be connected to an ICL 1901T at Bootle town hall and applications will include rent and rate book updating, issuing cash receipts and the recording of payments against any fund type.

The other four authorities are Sedgefield District Council, Chester City Council, Adur District Council and the Vale of White Horse.

Sweeping up debt

A COMPUTERISED instalment debt control service developed by Management Computing Services specifically for retail furniture outlets, and now operated by Centre-file, is being used by furniture and carpet retailers, D.B. Furnishers of Pontefract. The system provides retailers with a weekly list of accounts, including arrears, account status, action to be taken on bad payers, and analysis of arrears levels.

Switch to software

INVESTMENT in computer research and development at Honeywell is running at an annual rate of $200 million, according to chairman and chief executive Edson Spencer. The emphasis is switching towards software and minicomputer items, an area in which its well is doing particularly. Further acquisitions are planned, where they would fill gaps in Honeywell's technology, according to Spencer.

Provident 'first'

ONE of the first UK installations to use NCR's Virtual Resource Executive operating system is the Provident Mutual Life Association, which has replaced its NCR 201 with an NCR V8570 system to handle the expansion of its insurance business. The new system valued at £412,000, consists of a 640K processor with 1.2 Mbytes of disc storage and a 3,000 lpm printer.

Bureau service dropped

● From front page and Midas, Motor Industry Dealers' Accounting System.

IBM says that these packages are no longer being developed but that all commitments with respect to them made to customers before July 31 when IBM stopped actively selling the packages will be honoured. The commitments cover areas like program maintenance.

RBP is run on a 370/168 at IBM's new bureau centre in Warwick, along with IBM's RJS and TSO services. The latter two are both still being actively marketed. The other machine at Warwick, a 370/168, runs Terminal Business System, TBS, for transaction processing and reporting.

'Fallacious reasons' why Basic is popular on small systems

DR Richard Stevens gives reasons (CW, October 26) why Basic is popular on small systems. While accepting that the reasons stated are in agreement with popular wisdom, I feel that they are largely fallacious, depending in part on the common failure to distinguish between the Basic language and the operating system in which it is generally embedded. To consider the reasons in detail.

1. It is true that Basic is usually interpreted, but compilers do exist; in passing, it would be desirable to keep production programs in compiled form. Similarly any other language can be interpreted, so Basic's alleged advantage in being interpreted is largely a reflection of the software that hardware producers have provided.

2. Basic has some very un-English-like features which hinder comprehension. It is the only high level language I know where we have to write T instead of TOTAL, and it forces some peculiar constructions. I would be very surprised to hear my wife say "If it is not raining, ignore my next statement. Remember your umbrella". Yet this is the structural equivalent of

```
80   IF X > = 0 THEN 100
90   LET X = –X
100  ...
```

Some versions of Basic do provide more intuitively acceptable control structures. However, apart from the general problems of stretching a design out of shape, should they properly be called Basic? How far would the language have to change to be called Algol?

There would also be no bar to providing Basic-like editing facilities for other languages.

3. While some Basic systems are fully interactive in the way described by Dr Stevens, others are not. Also debugging facilities of this type can be, and are, provided for other languages — eg Mantis on DEC10. There are languages such as Joss and its derivatives, and also APL and POP2, which are inherently fully interactive. This, however, is not a consequence of the design of Basic.

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A computer's 'intuition'

IN a letter headed "Why IBM presumes too much" (CW, October 26), Professor Barron discusses the statement in the IBM advertisement, "No computer will ever be able to make decisions based on intuition". Even a professor would be bold in proclaiming his certainty that such a statement was false, and Professor Barron is prudent. But there is a strong implication that he believes computers will one day intuit.

One asks whether the basis for this belief is a careful study of the inherent limitations of programmability; or is it rather an (intuitive) technological optimism, an unwillingness to accept any limitations on the functions that computers can perform?

Either way, Professor Barron is imprudent enough to risk an analysis of human intuition. "Presumably there is an elaborate process of associative searching", for what it may be worth, I can report that my intuition does not tell me that my intuition works like that. The statement seems dangerously close to the reductionist one that intuition is nothing but an elaborate process of associative searching – from which we can be invited to conclude that the advent of large-scale associative storage will enable us to simulate intuition. Does Professor Barron presume too much?

May I propose a Turing-like test: If a decision has been made by a computer, and if a human being cannot tell whether the decision was made by a computer or by a human being using intuition, then the computer can be said to have used intuition. To me, this variation on Turing's test is even less convincing than the original.

May I propose a counter-test? Suppose Professor Barron programmed his computer to prefix all its outputs with a statement about the class of process it had employed in their production. One could readily accept messages starting - for example) "I have computed", "I infer", "I detect", "I have retrieved".

What possible programming process would he associate with the statement "I intuit"?

By the way, both Professor Barron and IBM might like to tell me in what sense computers may be said to take decisions.

COLIN TULLY
Lecturer
York University

It's up to operators

THE Institute of Data Processing Management was happy that Bernard Allen in Op Spot CW, October 26), should pick up our changes which will allow operations staff with appropriate experience to join our professional ranks. However, I fear our intentions may not be clearly understood as instanced by Bernard when he writes that "the people who work day and night in the computer room environment are left out" and that IDPM "should start by talking to operators about the problems they face in relation to training, shift work and career progression".

If operators are left out it will be only to the same extent that programmers and even analysts with less than a required level of experience will be left out. No one has suggested to us that we should lower our entry requirements and allow anybody to join. The IDPM is not a club. In fact, we have just raised the entry requirements, not to make ourselves more exclusive, but in order to be representative of the increased level of professional skills now present in the industry.

What we have done is to say that for the first time we will accept operator experience when evaluating an applicant. An applicant with two years as an operator, then two years as a programmer, then one year as an analyst will get appropriate credit for the operating experience. The value placed on the credit will be different if gained on a large 370 as distinct from a small System 3. Should the applicant have stayed in operations and reached a position of responsibility, then our evaluation based on years and months is type of experience may qualify for direct entry to a professional grade.

I believe that IDPM has already demonstrated its wish to talk to operators as witnessed by a recent meeting of our Central London branch, held in conjunction with Computer Weekly, especially for operators. It was standing room only. But surely what we must do is not just talk to operators. We have to arrange a constant dialogue between operators and DPMs.

We can provide the opportunities. We have a very real interest in the problems of the operators. We are especially interested in their career progression. But in order to do something about these things, the operators have to come forward.

EDWARD G. CLUFF,
Secretary General
IDPM
London

OVERCOMING the problems of using handprinted characters as a vehicle for data entry via optical character reading systems, Scandata, the OCR systems manufacturer, has officially announced its AlphaNumeric handprint system in the UK.

It has also announced that its first customer in the UK is Lloyd's Bank, which has installed a system to handle payroll applications, and that further systems are to go to the National Westminster and Midland Banks.

Previously, only high-quality printed numeric characters, with a few special letters, were usable with OCR scanning systems, but by using a flying spot scanner that separates "read" characters into 1,280 video elements, the Scandata system can handle numbers from 0 to 9, capital letters and the symbols +, /, –, and ..

By-passing the delays associated with online correction of rejected characters, the system features an offline Scanplex 1 VDU that allows such characters to be stored and corrected while the source documents are still being scanned.

A typical system featuring a 32K 2250/1 OCR system with a 450 recognition unit and a Scanplex 1 VDU, plus peripherals, costs about £216,000.

Linked with the launch of AlphaNumeric handprint, Scandata has opened its demonstration and training centre at Hounslow, where a Scandata 2280 OCR system and a Cummins Keyscan Mixed-Media OCR system have been installed.

White House installs hotel system

FOLLOWING the London Penta hotel (CW, July 6), the 800-room White House Hotel in London, owned by Rank Hotels, is to install the Computerised Hotel Accounting and Management Processing System from Marcol Computer Services. Based on a twin Data General Eclipse S130 system, the Champs system handles all reservation and accounting applications.

Participative systems design

Part 2—By Frank Land

Involve all staff in the diagnosis of their own efficiency

The failure of systems designers to include the views of users in their design specifications was a feature of a BCS survey of DP user requirements. In an effort to overcome this type of criticism, a technique of participative systems design has been created by three specialists in computers and systems management: Enid Mumford, of the Manchester Business School; Frank Land, senior lecturer in computers and systems analysis at the London School of Economics; and John Hawgood, director of the computer laboratory at Durham University. Their technique has been implemented at a number of user sites, and in a specially commissioned series of five articles, Mumford, Land and Hawgood will describe their methods, drawing on their implementation experiences of the technique.

The first article, last week, was by Enid Mumford. This week Frank Land (pictured left) writes on design groups and diagnosis.

PARTICIPATIVE systems design means giving the user a major part to play in the design of his own computer system and of the network of roles, relationships and tasks that surround the technical system.

When a new computer system is being introduced into a clerical or shop floor department the approach used by the authors is to create a design group consisting of representatives of all functions and grades of staff and, if possible, to involve all staff in the department in the diagnosis of their own efficiency and job satisfaction needs and in the choice of final system solution.

The professional systems analysts are also members of the design group and their role is to give advice on how the computer can assist the achievement of efficiency and job satisfaction objectives, and to design the technical part of the system when this is agreed.

In addition to the design group, a steering group of senior user management, senior systems management and senior trade union officials is also formed.

The role of this group is to provide the design group with top management and union sanction and assistance, and to act as advisers if the design group and their role is to group becomes anxious that a particular system solution may not be in line with company policy.

This approach may sound difficult or even impossible. The authors have now been able to use it in six different kinds of organisation and the results have been excellent — good computer systems, liked by the staff who use them and associated with well designed jobs which provide interest and challenge.

The first task for a design group of this kind is to take responsibility for making an accurate diagnosis of user needs. These will include present job satisfaction and efficiency needs, and an assessment of future needs and priorities.

With participative systems design an increase in job satisfaction is always a system objective. Because the design group has no experience of doing this kind of analysis, and the intention is to use the whole department as diagnosticians, the authors have developed a number of simple tools that can be taught without difficulty to design groups and their departmental colleagues.

These are:

1. A method for identifying efficiency needs and problems — called "variance analysis" because it focuses on weaknesses in the existing system;

2. A method for identifying job satisfaction needs — "job satisfaction" analysis; and

3. A method for identifying significant opportunities and development goals — "future analysis."

VARIANCE ANALYSIS consists of identifying all the weak links in the way the tasks of a department are carried out prior to the change. This includes aspects of work where coordination is difficult, and where errors either occur frequently or occur infrequently but are difficult and expensive to correct.

All staff in a department are usually expert in these problem areas. They have been trying to get something done about them for years. They can all be involved in documenting the nature of each problem, where it originates, where it shows up, where and how it is controlled, and in suggesting how it could be avoided or more effectively controlled in the future, assisted by the new computer system.

JOB SATISFACTION is defined as the "fit" between what an individual or group is seeking from the work situation and what they are receiving from it.

This is something that can be measured provided job satisfaction can be successfully defined. The authors see it as being achieved when five sets of needs are met in the work situation.

These are knowledge needs, psychological needs, efficiency needs, task methods and ethical needs. The following kinds of questions which are asked through questionnaires and small group discussions will help identify these needs:

1. Knowledge needs — to what extent does the existing organisation of work meet employee needs for work that fully uses, and helps develop, their skills and knowledge;

2. Psychological needs — to what extent does the existing organisation of work meet the needs of the employee for responsibility, a sense of achievement, status and recognition;

3. Efficiency needs — to what extent does the work situation provide employees with the support services and control system that assist their efficiency;

4. Task needs — to what extent does the way in which work is organised and jobs are signed meet employee needs, skilled and challenging work and,

5. Ethical needs — to what extent does management's treatment of employees in the way they are treated, particularly in respect of communication, consultation and involvement in decision taking?

FUTURE ANALYSIS attempts to identify the way the department in the future, the extent to which it will be subjected to major change. Change may be a result of demands from customers, technical possibilities, management or employee attitudes, new legislation, many other factors.

In order to design a system which will meet the needs of the future as well as of the present, the design group has to identify the kinds of changes that occur over the expected life of the system, and then how flexible the system has to be to accommodate the important of these changes.

Because change can be predicted with any high accuracy within a fairly time horizon, the plant horizon for the new system lie within this forecast horizon.

These three techniques variance analysis, job satisfaction analysis and future analysis provide the design group diagnostic information to enable it to see human, administrative and technical objectives as a preliminary to system design. How objectives are and benefits assessed will be discussed in our next contribution.

In the firms where we have used participative systems design the kinds of variances that have been identified have been very different, but their horizons have not.

The most vulnerable parts of a system are where it interfaces a boundary, where it interacts with the outside world either to a lesser extent, between its sub-boundaries.

If greater control can be cured over these variances, then efficiency will be improved.

In the same way, job satisfaction needs have proved similar in the different organisations. Most employees want work that has interest variety, challenge and opportunity to use their abilities and develop their own potential.

The creation of jobs that meet these characteristics leads to an increase in job satisfaction.

50th Faraday Lecture

THE first presentations of the 50th Faraday Lecture of the Institution of Electrical Engineers were given in Swansea earlier this month.

Entitled The Diagnostic Electron, the lecture is an overview of the use of electronics in medical diagnosis. It was written by a team of six specialists from EMI, who will take turns to present it...

The lecture will be given at 14 other cities in the winter. The next two presentations will be at 20 and 21 November on November 27 and 28, and there will be a London presentation in February. For details contact the EMI on 01-240 1871.

BCS SPECIALIST GROUPS — LIVING WITH COMPUTING

The British Computer Society's specialist groups are organising a conference in London from January 4 to 6, called BCS 79, Living With Computing. In this series of articles, the work of the specialist groups and their BCS 79 plans are described. This week the focus is on the medical groups in an article by the groups' chairman, Dr Barry Barber.

Power and potential of computers in medical profession

Dr Barber

THE Medical Specialist Groups of the British Computer Society were formed towards the end of the Sixties, at a time when a number of doctors, scientists, nurses and administrators and computer professionals had begun to see some of the possibilities opened by computers in the health care environment.

A number of teaching hospitals had installed small batch processing computers and were exploring their value, regional hospital boards were using small batch processing computers for their financial systems and the Ministry of Health had initiated its experimental computer programme to explore real time computer systems in health care.

Although there have been many surprises along the way, many of the things discussed and proposed at that time are now operational in a few centres, and the challenge of the present is that of spreading the benefits of the few prototype systems across the Health Service as production model systems.

The Medical Specialist Groups ran two national conferences in Birmingham (1969) and Bristol (1971), then divided into three groups based in Scotland, Northern England (Manchester) and Southern England (London).

Each group operates differently, according to its geography and membership. The Scottish group prefers one-day meetings, the Northern group arranges ad hoc meetings and the Southern group has a programme of evening, half-day and one-day meetings. The total mailing list is about 800, many of whom are not members of the BCS, but are interested doctors, nurses, administrators and scientists who pay a nominal fee to join.

One of the major objectives of the groups is the mutual education of computer and health care professionals in the power and potential of computer systems and developing guidelines for good practice in their implementation. The groups provide an open forum for discussion of the multitude of related matters concerned with computer system design and implementation from technical aspects of computer hardware, operating systems and data-bases to the system aspects of user education, privacy and security.

The Specialist Groups have been involved with the medical computing committee of IFIP(TC4) and were a founding member of the European Federation for Medical Informatics.

So far the biggest enterprise of the Medical Specialist Groups was the running of the first Federation Congress, Medical Informatics Europe MIE 78, in Cambridge this September. Over 420 delegates attended a very successful meeting. The opening speakers were Professor Maurice Wilkes and Sir Douglas Black, president of the Royal College of Physicians. David Ennals, Secretary of State for the Social Services, spoke at the dinner and the proceedings are already available from Springer Verlag (56 DM) or direct from myself.

As well as the more specific changes, two general developments are interesting. One is the greater involvement of the nursing profession in the development of computing in the health care field.

The second major development is the increasing awareness that the various management services disciplines represent facets of a single activity. The word informatics, a specifically non-English word used by few British computer professionals but by most international English speaking computer professionals, embraces all aspects of this activity.

To launch these activities, the Medical Specialist Groups of the BCS set up a UK co-ordinating committee to provide a national view for meetings of the Council of the European Federation for Medical Informatics and to promote and co-ordinate national activities.

BCS 79 will provide an opportunity to see some aspects of medical computing within the context of the other BCS specialist groups.

Officers of the BCS Medical Specialist Groups will be glad to provide information on their activities, the work of the European Federation and the planning for Medical Informatics Berlin which is due to be held in Berlin from September 17 to 20, 1979. They may be contacted through the BCS.

RELATIONAL DATABASES

By Max Stewart   Part 4

IN Part 3 a technique for constructing fourth normal form (FNF) files was presented. This week we will use the technique to construct FNF files from the brewery example given in Part 1. The advantages of FNF files will be discussed and we will go on to show how relationships between files can be represented.

Relationship diagram. The relationship diagram for our brewery supplier is:

```
ITEM

DESCRIPTION

QYT-IN-STOCK

ORDER-NO

CUSTOMER

SALESMAN

QTY
```

From this diagram it can be seen that:
ITEM is a direct key for DESCRIPTION and for QTY-IN-STOCK.
ORDER-NO is a direct key for CUSTOMER.
CUSTOMER is a direct key for SALESMAN.
A concatenation of ITEM and ORDER-NO is a direct key for QTY.

Application of the technique described in Part 3 results in the following breakdown of the relationship diagram into four FNF files:

ITEM	ITEM
DESCRIPTION	ORDER-NO
QTY-IN-STOCK	QTY
ORDER-NO	CUSTOMER
CUSTOMER	SALESMAN

The underlined data items are prime keys; in the second file, ITEM and ORDER-NO together form a concatenated key. Figure 2 shows details of each of these files.

The n-to-n relationship between ITEM and ORDER-NO does not result in a fifth file (which would be built in Step 4 of the process) because ITEM and ORDER-NO together form a concatenated key for QTY (and would thus be selected in Step 1).

Normalisation. The conventional file shown in Figure 1, Part 1, could have been decomposed into the four FNF files in Figure 2 by a process different from that described in Part 3. This alternative process is called normalisation, and it consists of reducing the conventional file to first normal form, then to second normal form, to third normal form and finally to fourth normal form.

The results of the two processes are the same and readers who have followed this series will have no trouble in understanding any of the standard texts on the subject.

A disadvantage of normalisation is that a conventional file needs to be designed before it is normalised. If the conventional file already exists, fine; if not, it must be designed. The relationship diagram method can be used on a collection of data items which have not yet been formed into files.

Advantages of Fourth Normal Form files. FNF files have several advantages over their conventional equivalents. These advantages are illustrated by examples which compare the FNF files in Figure 2 with the conventional file in Figure 1, Part 1.

Ease of Use. FNF files can be represented by tables; conventional files with repeating groups cannot. Tables are readily understood by non-programmers.

This is the fourth part of Max Stewart's series on the development and use of relational databases. It expands on the technique of constructing fourth normal form file, FNF, and goes on to show how relationships between files can be represented. Stewart is a divisional technical support manager for Leyland Vehicles, the commercial vehicle sector of BL.

Addition. If a salesman finds a new customer, this customer identity cannot be added to the conventional file until a customer places an order. It can, however, be added to File b Figure 2 together with the name of the salesman.

Update. If customer Spuman is allocated to another salesman is necessary to update three occurrences within two records in the conventional file but only one occurrence within one record in File d. If instead, salesman Joe is replaced, it is necessary to update two occurrences within two records in the conventional file, but only one occurrence within one record in File d.

Deletion. If ITEM Bung ceases to be stocked, all references to CUSTOMER Fuddle and SALESMAN Jim vanish in the conventional file, but not in the set of FNF files. Note that Jim is Fuddle's local salesman irrespective of what items Fuddle orders.

Efficiency. FNF files have fixed length records (ie no repeating groups). Fixed length records can be handled more efficiently: both hardware and software than can variable length records; software can be simpler, and the packing density (on disc) is higher. Note, however, that our aim up to now has been to produce a logically sound file structure which is implementation independent.

There are no hidden and unsuspected relationships between data items in FNF files. Data items in a file, which do not form part of a candidate key are unrelated, unless there is a multiple relationship. This will be described later in this series.

Relationships between Files. When files have been designed using the inter-item relationship diagram (the formal name for the type of relationship diagram used up to now), the inter-file relationship diagram can be drawn. This shows the relationship between the keys (which may be concatenated keys) of different files.

Another example of inter-item relationships is shown in this diagram:

Notes	Item	Relationship
School roll no	PUPIL	
Long text field	PUPIL-DETAILS	
Subject names are unique	SUBJECT	
Long text field	SUBJECT-DETAILS	
Mark value	MARK	
Examiner no	EXAMINER	

One pupil does not sit the same subject twice, and an examiner may mark papers in several subjects. Examiners marking popular subjects may share the workload with other examiners. The corresponding FNF files are:

PUPIL	PUPIL-DETAILS
SUBJECT	SUBJECT-DETAILS
PUPIL, SUBJECT	MARK EXAMINER

where the prime keys for each file are underlined.

The corresponding inter-file relationship diagram is:

Notes	Key	Relationship
Pupil file	PUPIL	
Subject file	SUBJECT	
Mark file	PUPIL, SUBJECT	

The Pupil file is related to the Mark file on PUPIL (the school roll number), and the Subject file is related to the Mark file on SUBJECT (subject name).

Summary. Let us summarise what has been achieved so far. We have defined keys, dependency, candidate keys and FNF files; shown how to draw an inter-item relationship diagram; presented a technique for producing FNF files from this relationship diagram; and shown how to construct an inter-file relationship diagram.

Part 5 will discuss some aspects of implementing a system of FNF files.

File a		
ITEM	**DESCRIPTION**	**QTY-IN-STOCK**
Keg	Steel	300
Bung	Steel	10,000
Tap	Brass	300

File b	
ORDER-NO	**CUSTOMER**
1	Grotny
2	Spuman
3	Eversoft
4	Crudgington
5	Fuddle
6	Spuman
7	Grotny

File c		
ITEM	**ORDER-NO**	**QTY**
Keg	1	12
Keg	2	20
Keg	3	8
Bung	4	1,000
Bung	5	500
Tap	2	20
Tap	6	10
Tap	4	30
Tap	7	60

File d	
CUSTOMER	**SALESMAN**
Grotny	Joe
Spuman	Jack
Eversoft	Jack
Crudgington	Jack
Fuddle	Jim

Figure 2

DEC announces real time boost for VAX-11/780

HARDWARE and software enhancements for the VAX-11/780 have been announced by DEC to help users with their real time scientific and process control applications. Two of the new products, an improved semiconductor memory and the BLISS-32 high level systems implementation language, have already been announced in the US (CW, October 5).

The new memory uses 16K bit chips and is available in increments of 256K, 512K and 1,024K bytes. Its use raises the maximum memory size from two to eight Megabytes. A one Megabyte increment now costs £23,625.

BLISS-32 is intended for the development of operating systems, compilers, run-time system components, database systems, communications software and utilities.

It translates source programs into relocatable object modules that can be linked for execution.

The BLISS compiler costs £12,000 to buy, or the whole system can be licensed for £4,800.

Two new direct memory access interfaces have also been announced. The LPA11-K system transfers data at an aggregate rate of over 100,000 samples a second, and can be used either in single user mode or for the control of up to eight experiments simultaneously. The DR11-B system is a 16-bit parallel interface for applications requiring higher data rates. The LPA11-K costs £5,265 and the DR11-B, £1,094.

The other new product is the TU45 tape subsystem, which has a read/write speed of 75 inches per second, data densities of either 800 or 1,600 bits per inch, and a data transfer rate of 120,000 chps. The nine-track slave drive version of the subsystem costs £9,923.

First major customer

CONSUMER buying guides will form a substantial part of Baric's 8,000 page Prestel Information Provider service, and Baric has signed up its first major customer for 400 pages. The customer is Comet Radiovision Services, the electrical goods discount house. Baric will prepare the pages, updating some of them weekly to show Comet's latest goods and prices.

Comet will pay £10,000 for the first year to reach Prestel subscribers.

Salespac debut at Compec exhibition

AN order processing, stock control, and accounting system designed for operation by inexperienced users has been introduced by Gamma, and will have its first public showing at the Compec exhibition which begins on December 5 at Olympia.

Called Salespac, it is based on Digital Equipment hardware, and Gamma's first customer for the system is Konishiroku UK, the Feltham-based branch of Konica Cameras.

The Konishiroku system uses a DEC Datasystem 354 to handle order entry, order processing, stock control, management reporting and sales ledger applications. Talks are also taking place with Gamma, and will have possibility of adding a word processing capability for mailing purposes, and purchase/nominal ledger and budget forecasting facilities are to be provided later.

A typical small Salespac system would consist of a DEC 320 processor, two VDUs and a line printer, and this would cost about £21,000, while a large system, based on a PDP-11/70, could support up to 32 VDUs and cost about £120,000.

Software, which is written in Dibol and can be run under either the CTS 300 or CTS 500 operating systems, costs £5,000 in all cases.

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ITEM
│
DESCRIPTION─┐
│
QTY-IN-STOCK─┤
│
ORDER-NO─┤
│
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│
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market place
For SALE

Privacy: Let's go back to first principles

When the industrial action at Her Majesty's Stationery Office is over, the report of the Data Protection Committee will be published, although its main conclusions are likely to be those outlined in the leaked report (see page 5).

In this article, written before he had seen news of the likely contents of the DPC report, director general of the Computing Services Association Alan Benjamin suggests that we should go back to examining the issues involved from first principles.

IT IS not surprising that many people find the subject of privacy confusing. Protection of the individual from the invasion of his privacy is a complex legal and social issue and one which is of interest chiefly in those countries where free discussion of the issue is possible.

Data protection can, however, be a powerful tool for liberty and personal freedom in ways which are wider than those associated just with the individual.

Like all new phenomena, it has its possibilities for abuse and some of these are now visible and affect the use of computing, which is why I am concerned.

Although we cannot yet know what the Data Protection Committee has said to the Home Secretary, we can guess that it has wrestled with some of the issues which have been reflected in legislation and draft regulations in other countries. These concern the licensing or registration of data files which (at the moment) contain data on "natural persons" (as opposed to corporate entities).

Realisation of the possibilities for misuse of data, deliberately or accidentally, caused the whole movement of individual privacy protection to start.

It was thought that computers heightened these possibilities, and those concerned with the liberty of the individual found the computer a convenient target. The computer was little understood, and for that reason feared, and it was overwhelmingly used by the establishment.

The late Kenneth Younger, in the report of his commission's work, and other researchers found no evidence that computers offered increased dangers, only that the use of computers posed different problems from those set by the use of manilla envelopes or loose leaf ledgers.

Nevertheless the demands for the protection of an individual's privacy were a response to a real need in those societies which were becoming dependent upon information systems for their infrastructure and much of the administration.

As concern grew in Europe and North America, committees, working parties and commissions all researched and reported. The issue widened from that of the rights of the individual, to that of human rights generally, then to the sovereignty of nations and most recently to a "new world information order" now being heralded in most UN conferences.

Fears emerged that if files containing personal data on one country's nationals were held in another country's databases, somehow those files and, by extension, the people referred to would ipso facto be subject to abuse.

Further if personal data, why not non-personal data or even all data? Were countries not likely to be made "data slaves" of those who were rich enough or clever enough to collect, analyse and process such data?

In addition information was increasingly being transferred by data communications systems, over satellites and with little inspection. This was described in one particularly paranoiac session at the Vienna Symposium in October 1977 as "data robbery".

The whole debate had now taken on an international dimension, with the European Parliament Council of Europe, OECD, EEC, the United Nations and other bodies all involved.

The problem has been clear from the beginning — either data can flow freely from anywhere to anywhere or not.

If it is impeded, then communications, good or bad, will decline with consequent effects on trade, knowledge transfer, interpersonal contact and competitive forces.

Buried in this mass of activity

Protection Committee will [...] this and opt for codes of practice to be used where [...] data on natural persons is [...]

In 1978 the CSA submitted recommendations to the [...] Protection Committee and [...] the kernel of those recommendations was adopted by [...] British Computer Society, [...] IDPM (then DPMA) and [...] European Computing [...] Association.

There were two essential principles in the CSA plan:

1. That any kind of legislation or regulation contemplated by the government should apply to the use of data and not that [...] and,

2. That a "beneficial use" in the UK should be made responsible at law for complying. This "beneficial user" was a person or organisation whom or on whose behalf for whose benefit data is collected, sorted, processed, used.

These principles have [...] the test of many debates [...] alternative suggestions [...] serve two intrinsic points [...] responsibility is assigned [...]

By Alan Benjamin

and confusion is the simple originating requirement — that an individual's privacy needs protecting — and the fact that technology which offers the means of threat also offers the means of defence.

Among the many sub-issues which have arisen is one of potential danger — that data flow regulations and data protection laws could be used as invisible trade barriers, or in some way manipulated to equalise technological positions.

It is obvious to all of us that there are many stresses and strains in the world trading position at the moment. Traditional industries are declining under the dual attack of technology and better productivity from the third world.

Adaptation comes hard to the old world — especially where it is required urgently and is on a large scale, simultaneously affecting many traditional activities; protection is easier and both psychologically and politically popular. As resources are devoted to protectionism, the needs of new growth industries or fledgling technologies are neglected.

So it is with data. The protection syndrome is at work — not for the original purpose of improving the social atmosphere for individual, but for international political and economic reasons.

We must realise that the flow of data around the world is the very lubricant of freedom as we understand it. Trade, information, knowledge, technology — these all are able to pass freely from person to person, firm to firm, nation to nation.

Oppressive systems of government are made weaker by the availability of information, not by its suppression. The presence of fact, data, choice and option, all represented in information, is anathema to such regimes.

Another derivative of these issues is the now inflated monster called security. Some regimes believe that security can be a matter of law and regulation whereas — as logic and experience since the beginning of history tell us — it can only be a matter of practice and sound organisation.

It is to be hoped that the Data [...]

use (or misuse) is critical storage.

In the CSA submission sing of applications [...] embraced data on ind [...] was suggested. The "be user" would seek perm use the data and w [...] granted such permission codes of practice (incl [...] those relating to sec [...] appropriate to the sensit [...] the data.

The CSA felt that this [...] between the needs of the co and the undue imposit [...] regulations on data proce was about right.

It is argued that similar in other countries would re a network of data protect standards providing safeg [...] for the citizens of those [...] tries. Processing could [...] place in any country observed such standards are appropriate "beneficial use the point to which any d [...] plaint could be directed re [...] responsibility was visible accountable.

The flow of data in [...] countries subscribing to standards could remain [...] ceded — and here is the [...] potential of the standard porting liberty for the dividual.

No licence would [...] to a "beneficial user" [...] to, or proceed personal [...] country that did not [...] such standards. In [...] law could be broken, [...] are other systems of [...] deal with breaches [...]

We might [...] about the order of [...] sitivity, but at least [...] can adopt approach and can [...] groups of data [...] sensitivity [...] Credit Act by [...] this idea [...] is concern [...]

Perhaps [...] the original [...] that data [...] safeguarded [...] ance with [...] is a sound [...] will in a [...] Equally [...] plausor to [...] of the [...] local [...] many [...]

SPOT LIGHT ON

PUBLIC SECTOR

Applications are invited for the following posts within the Polytechnic's **Management Information Centre** based at the Waltham Forest Precinct.

Head of the Management Information Centre

(Principal Lecturer) (Ref: S/BE.120a)

Responsible for the provision of management information and the development of planning systems for the Polytechnic.

Senior Lecturer

(Management Systems) (Ref: S/BE.120b)

To administer, develop and, lecture in, management information and planning systems.

Systems Project Leader

(PO1(a)) (Ref: S/BE.120c)

To supervise the development and implementation of management information systems.

The above posts will contribute to the Centre's provision of a management information and planning systems service to the Polytechnic as a whole, and candidates should be able to demonstrate appropriate experience in a relevant field.

Applicants should be graduates, preferably with post-graduate research or professional experience for the PL and SL post, and with professional experience for the PO1(a) post.

Salary Scales:

Principal Lecturer: £7,047-£8,844 per annum*
Senior Lecturer: £6,051-£7,572 per annum*
PO1(a): £6,012-£6,627 inclusive*
*Plus London Allowance

Further details and application form from:
The Senior Academic
Personnel Officer (Ref 2)
North East London Polytechnic
Forest Road, London, E17 4JB
Telephone: 01-527 2272 (Extension 20)

Closing date: November 30, 1978

NELP North East London Polytechnic

NATURAL ENVIRONMENT RESEARCH COUNCIL — HEADQUARTERS — SWINDON

HIGHER SCIENTIFIC OFFICER/ SENIOR SCIENTIFIC OFFICER ANALYST/ PROGRAMMER

NATURAL ENVIRONMENT RESEARCH COUNCIL

Systems Development and Operations Staff

Salaries: to £5,720 annum

The British Transport Docks Board Computer Centre provides computer systems development and operations services to 19 ports and other port industry organisations. The Centre has completed a major review of the ports computing requirements in preparation for the replacement of its large mainframe computer. Mini-computers with visual display terminals and communications facilities have recently been installed at major ports to link up with the equipment at the Computer Centre. The Board require the following staff to facilitate the introduction of the new equipment, to work on a number of interesting new projects and to provide continuing support for existing systems.

Programmers

Cobol and/or Assembler experience essential. For more senior positions, will be responsible for suite and program design, specification, coding and testing. Will supervise programming staff and liaise with Systems and Operations staff. Knowledge of structural programming techniques would be useful.

Computer Operations Clerks

The Operations Clerks work on a shift basis (for which additional payments are made) and will be required to operate the Centre's present ICL system 4 computer, its eventual replacement, and the data transmission and ancillary equipment. They will also undertake data control duties which include liaison with users, assembly/disassembly of computer runs and despatch of output. Previous experience of similar work is essential.

Systems Analysts

Responsible for systems analysis, design, development, implementation and maintenance activities and liaison with programming, operations and user staff. Previous experience of systems work is essential.

Punch Operator

The Punch Operator will be required to operate card, paper tape and Redifon Key-to-Disc equipment and also to assist in data control work.

These vacancies offer the opportunity to join a professional and friendly team working to high standards. Some travel within the U.K. may occasionally be required. The Centre is easily accessible from the M4 motorway and Hayes and Harlington Railway Station (Western Region). Conditions of service include 22 days holiday per annum including Bank Holidays, a sick pay scheme, pension scheme and 60p per day bus been vouchers.

Applicants are invited to contact Tim Bever, Systems and Programming Manager or Joe Dadin, Computer Operations Manager on 01-574 5015 or write to British Transport Docks Board, Computer Centre, Hayes Road, Southall, Middlesex UB2 5NE.

British Transport Docks Board

THE UNIVERSITY OF LANCASTER COMPUTER SERVICES

Applications are invited to fill the following posts:

92/1/A OPERATIONS MANAGER
(Administration Grade II)

Salary scale: £6317-£7784

92/2/A SYSTEMS PROGRAMMER
(O.R. Grade 1A)

Salary scale: £3384-£6848

92/3/A APPLICATIONS PROGRAMMER
(O.R. Grade 1B)

Salary scale: £3384-£5804

HYDRO-ELECTRIC

SYSTEMS PROGRAMMERS

£4,660-£7,146

UNIVERSITY OF NOTTINGHAM CRIPPS COMPUTING CENTRE

SYSTEMS PROGRAMMER

LAMBETH COMPUTER CENTRE

needs a

COMPUTER OPERATIONS MANAGER

(£6948-£7665 incl.)

LAMBETH

Programmer

LONDON SE1

We require, for work on an ICL 1903T Computer, a programmer operating under GEORGE 3 on systems for accountancy, stores control, purchase ordering and power station maintenance scheduling.
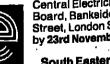
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THE LIBRARY ASSOCIATION

BIBLIOGRAPHICAL AND INFORMATION SYSTEMS OFFICER

The Library Association Council has approved the creation of a new post in the Association's Secretariat, working directly to the Deputy Secretary of Bibliographical and Information Systems Officer. The post will be responsible for the Association's concerns in bibliographical standards and bibliographical systems and services, on-line developments in computer software and hardware developments. Viewdata, the creation of a national forum for the discussion of matters related to systems including Post Office papers and costings, co-ordination of the users' view of nationally provided services, and also to ensure professional involvement in current international developments in these areas, e.g. Unesco and Council of Europe programmes.

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Ascii through the Logic Gate

An epic in 32K words, by Richard Forsyth

Block 21 (A Stumbling Block)

Disorientated by Simula's surprise telecommunication, Hex has done a bunk, leaving his friends in Sprocket's Hole. He is making for Fort Ranfour via Silicon Valley. There he pauses near his father's grave to ruminate on the benefits of forgetting.

LULLED by his hymn to forgetfulness, it had almost slipped Hex's memory that he was in hostile territory. He remembered suddenly when a shrill voice piped up right behind his ear.

"Behold! It is as it was foretold!"

Hex almost leapt out of his shoes. Not two metres away was a diminutive elf-like personage of indeterminate age. He was rotund in shape with wispy orange hair and a small pointed beard.

"Welcome O Son of Synapse," intoned the strange little man. "I am the humble goatherd, Johnny McNull. I wish to become one of thy disciples, even though I am unworthy to reboot thy bootstraps."

Hex stood transfixed. At first he had taken the stranger to be an android like himself, for he was bedecked with pieces of electronics. Quartz crystals, calculators, modulators, de-modulators and assorted chips hung from his clothing like jewellery. On second thoughts he decided that all this was mere adornment. McNull was probably a human who had failed the cybernation course but collected electronic curios like a jackdaw.

"I have no disciples," he asserted. He could see at a glance that the man was mad, but he didn't seem dangerous.
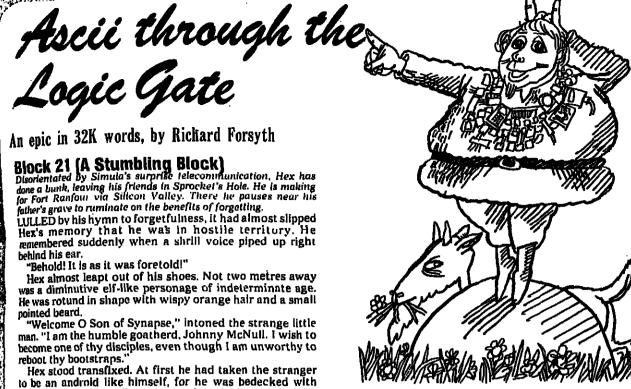
McNull began a reverential monologue. "Was it not prophesied in the sacred scroll-mode texts that there would be wailing and gnashing of teeth among the people, and that they would groan exceedingly under the yoke of the Children of the Brain? Verily, it has come to pass. And was it not also fore-ordained in the earliest records that there should be revealed, even unto a lowly goatherd in the Valley of Sand, a goat with sixteen fingers to be a sign that the end of the System was at hand? Now mine eyes have seen that it is so."

"Sixteen fingers," replied Hex guardedly. "I only have twelve."

"Thou art blind to the signification of thine own name. Art thou not the Kid that is called Hexadecimal?"

"Yes I am."

"Then understand that thou art indeed the goat of prophecy and that the sixteen fingers are the sixteen digits of the hexadecimal scale — including of course zero, which is I, McNull."

Hex saw now that this madness was dangerous after all. He backed away.

"Lead us, O Master Program, we beseech thee, out of the Domain of Negative Irrationals through the Ordered Field into the Promised Range. For truly thou art the Transformation Function."

"There is no Promised Range."

McNull looked crestfallen. Hex pressed home his advantage with an oratorical flourish: "Verily I say unto you, the Promised Range is the Empty Set. It is a figment of your imagination."

McNull's eyes shone once again. He knelt down. "Such ineffable wisdom," he murmured reverently, "an imaginary root!"

At this point Hex bolted. He just kept running—out of the reservation and beyond, north towards San Jose. When he finally eased up, he was sure he had left his would-be disciple adrift far behind. The sun was sinking, but he decided to press on. There was no time to lose if he meant to beat Ascii to Fort Ranfour.

He rounded a corner and stopped dead in his tracks. A motorcycle was parked across the narrow way. On it, holding a terminator in either hand, was the ubiquitous James Hock.

"I've been doing some research," were his opening words.

Hex was speechless.

"There's a lot of information about you in the Database, if you know where to look. Apply a little common sense to it and your movements become rather predictable. I'm no APL guru, but I managed to knock up a few one-liners in an afternoon which gave your estimated time of arrival to the nearest minute — while the committee of savants up in Fort Ranfour is still haggling over data declarations."

"Good work," bluffed Hex. "I'm glad your disenchantment with brute computing power has brought you over to our side. We need beings of your calibre." He was playing for time.

"Ha, that's good!" replied Hock. "I'm not averse to flattery, but you'll have to raise the stakes a little to save your skin. There's a reward of 10 million Resource Units on your head. I could do an awful lot of text processing with those." He spun his firearms casually like a cowboy in a Western.

Suddenly McNull clattered into view, riding a sledge drawn by four goats. It was piled high with tubs of goat's cheese, milk and other delicacies, and had the words "McNull's Farm-Fresh Dairy Products" emblazoned on the side. Before Hock could react, he began pelting him with ripe yogurt.

Hex seized his chance. He grabbed Hock's crash-helmet and wrenched it the wrong way round. Hock lashed out blindly. A wild flash of radiation from his terminator struck the fuel tank on his machine and ignited the petrol. As he staggered back from the heat, Hex and McNull pinned him to the ground and disarmed him.

"Thanks," said Hex. "I guess I could use a disciple after all."

"All part of the service," replied McNull blandly.

"Hey? What happened to the biblical idiom? I was getting to like it."

"You mean the speech impediment. I got that through trying to follow the instructions in Do-It-Yourself Cybernation Magazine. It told me about the neural interface are meant to be +5 or earth; but mine weren't. I burnt out a chunk of my nervous system, I'm afraid. Ever since, when the feeling comes over me, I talk that way. I can't help it. You'll find I have other endearing quirks too."

"What about the Promised Range and all that?"

"Just as you say; it doesn't exist."

"Too bad," said Hex, regretfully.

They handcuffed Hock with his own cycle-clips and set off for San Jose on McNull's ramshackle chariot, leaving the bounty-hunter stranded in their wake.

Do you know the way to San Jose? It's going to be a bumpy ride.

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